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CONTENTS AND SUBJECT INDEX

Leukocytic Trephones. Alexis Carrel, M.D., New York....255

Factors Influencing Longevity. Raymond Pearl, Baltimore....259

A Skin Test for Susceptibility to Scarlet Fever. George F. Dick, M.D., and Gladys H. Dick, M.D., Chicago...265

Nonprotein Nitrogenous Constituents of the Blood in Eclampsia and Allied Conditions. E. D. Plass, M.D., Detroit....266

Diagnosis and Treatment of Diseases of the Seminal Vesicles. W. R. Delzell, M.D., and O. S. Lowsley, M.D., New York....270

The Seminal Vesicles in Arthritis. Daniel E. Shea, M.D., Hartford, Conn....274

Papers of Drs. Delzell and Lowsley, and Shea, discussed by Drs. Farman, Dillon, Jacobs, Thomas, Molony, Peterson, Rogers, Delzell and Shea.

Factors Responsible for Reduction of Mortality and Morbidity in Prostatectomy. B. A. Thomas, M.D., Philadelphia....281

Perineal Prostatectomy by a Modified Technic. J. R. Dillon, M.D., San Francisco....287

Papers of Drs. Thomas and Dillon discussed by Drs. Kretschmer, Hamer, Burford, Dakin, Stevens, Peterson, Lyons, Steinberg, Goldstein, Negley, Thomas and Dillon.

The Icterus Index (A Quantitative Estimation of Bilirubinemia): An Aid in Diagnosis and Prognosis. Alice R. Bernheim, M.D., New York....291

Arch Supports. Abraham Gottlieb, M.D., Los Angeles....295

The Case Against Axis-Traction Forceps. John Cooke Hirst, M.D., Philadelphia....295

The Treatment of Visceral Syphilis. Albert Keidel, M.D., and J. E. Kemp, M.D., Baltimore....299

The Etiology of Scarlet Fever. George F. Dick, M.D., and Gladys H. Dick, M.D., Chicago....301

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

A Unique Symptom Observed But Once in Seven Hundred and Sixty Cases of Major Trigeminal Neuralgia. C. H. Frazier, M.D., Philadelphia....302

An Unusual Case of Perforated Duodenal Ulcer. H. L. Schurmeier, M.D., Santa Barbara, Calif....302

Knotting of Duodenal Tube During Biliary Drainage. R. S. Boles, M.D., Philadelphia....303

An Unusual Cyst. P. E. N. Greeley, M.D., Waterman, Ill....303

EDITORIALS

Immune Reactions of Scarlet Fever.304

The Complemental Feeding of the New-Born....305

The Conquest of Pellagra....305

The Etiology of Dengue Fever....306

CURRENT COMMENT

Annual Educational Conference....307

Dermatosis from Furs....307

The Possible Potencies of Minute Materials....307

(Subject Index on next page)

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See Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "T," Therapeutics; "MI," Medicolegal; "P," Propaganda for Reform; "ME," Medical Economics.

Abortions in hard times....ab-345
Adenoids, Schick test in children with..ab-341
Alastrim, blood in....ab-239
Ambard coefficient....ab-340
Amyloid....ab-343
Anaphylaxis, prevention of....ab-339
Antiserums, residual and purified....ab-339
Aortitis....ab-346
Aqueous humor in central nervous affections....ab-343
Arch supports....*295
Army, French Army health statistics....315
Arsphenamin accidents....ab-339
dermatitis, treatment of....ab-345
Arthritis of dental origin....ab-342
seminal vesicles in....*274
Ascaris causes intestinal spasm....ab-337
Asthma and tuberculin....ab-345
and accessory nasal sinuses....ab-334
treatment of....ab-346
Aviation and sense of smell....316
Bacillus fusiformis and spirochetes in tuberculosis....ab-333
Bacteriophagy....ab-344
Bilirubinemia, Bergh's reaction....ab-344
estimation of....*291
Blackwater fever and malaria....ab-337
Blood after therapeutic bleeding....ab-336
determination of fat in....ab-346
dialysis in living subjects....ab-345
nitrogen in eclampsia....*266
phosphorus, determination of....ab-336
Bone marrow, soup from....ab-342
Book Notices....328
Books Received....Adv. page 28
Breast, cystic disease of....ab-346
Bronchitis, climatotherapy of....ab-337
vaccines in....ab-337
Burns, superficial, toxemia of....C-324
Calcium deposits around joints....ab-342
Cancer cells, biology of....ab-345
as disease of organism....317
cancer research....C-323
electrochemical diagnosis of....ab-346
formation of....ab-345
Cardiovascular tests inefficient....ab-331
Cecum, shortening of....ab-336
Chancroid, influence of, on syphilis....ab-239
Chickenpox virus in blood....ab-335
Cholesterolemia in obliterating arteritis..ab-239
Cincophen, antiphlogistic effects of....ab-336
Colon, ascending, dilatation of....ab-340
Correspondence....323
Costa's reaction in blood....ab-341
Cranium, shape of, and heredity....ab-345
Deaf Mutes, Congress of....318
Deaths....320
Dengue fever, etiology of....E-306
Dermatosis from furs....E-307
Diabetes insipidus, pituitary in....ab-336
mellitus, coma or hyperinsulemia?....ab-336
Diathermy of facial paralysis....ab-340
Diazo-reaction in blood....ab-345
Diet and mother's milk....ab-331
Drugs, electrolytic introduction of....ab-340
Duodenal tube, knotting of....*303
Duodenum, arteriomesenteric occlusion of..ab-342
Dysentery, amebic, Chaparro amargosa in....ab-334
bacillus agglutinated by tuberculosis blood serum....ab-333
Dystrophia, adiposogenital....ab-342
Eclampsia, nonprotein nitrogen in....*266
treatment of....ab-346
Educational Conference....E-307
Electric shock, treatment of....ab-345
Endarteritis obliterans, cholesterolemia in....ab-239
Enteritis, balantidium....ab-343
Epilepsy, effect of bromids on....325
Epinephrin, absorption of....ab-335
Epitrochlear glands, enlargement of....ab-340
Erythrocytes, suspension stability of....ab-342
Examinations for handlers of foods....MI-330
Exanthem from bathing....ab-341
Explosion, injury to patient from....MI-329
Eyelid, xanthoma of....ab-344
Fermentation, lactic....ab-339
Finger joints, disease of....ab-343
Foot and mouth disease in England....314
Forceps, axis-traction....*296
Foreign Letters....314
Fourchette, carcinoma of....ab-334
Fracture of articulation of atlas with axis....ab-343
reconstruction of shaft of bone....ab-340
Furs, dermatosis from....E-307
Gasserian ganglion, removal of....ab-344
radicotomy of....318
Germany, conditions of school children in..319
Goiter in Bavaria....ab-344
exophthalmic, gastric secretion in....ab-343
exophthalmic, persistent thymus in....ab-341
Gonorrhea in women, vaccines in....ab-344
Gouty tophi, structure of....ab-340
Government Services....318
Health insurance societies and physicians..319
Heart block, recurrent complete....ab-334
chemical regulation of....ab-343
Hemoclastic crisis of typhoid....ab-334
Hemophilia with male heredity....ab-346
d'Herelle's phenomenon....ab-336
Hydronephrosis, intermittent....ab-338
Hypertension and capillary pressure....ab-335
Hypothetic question....MI-330
Icterus index....*291
Ileus in parturient....ab-346
Infants, electric excitability of....ab-342
complemental feeding of new-born....E-305
Infundibulopelvic ligament....ab-341
Inks, medicolegal identification of....318
Institute of Colonial Medicine....316
Insulin absorbed from scrotum....ab-332
by-effects of....ab-344
excretion of....ab-332
reduction in price of....315
Insulin-like substance in kidney, spleen and muscles....ab-332
Intertrigo, hexamethylenamin in....ab-342
Intestines, sarcomas in....ab-346
spasm of, from ascaris....ab-337
Intussusception, acute, in children....ab-340
Iodin content of sea foods....ME-327
Jaundice with duodenal ulcers....ab-239
Joints, calcium deposits around....ab-342
Knee joint tuberculosis....ab-337
Larynx, chronic stenosis of....ab-343
tuberculosis, chaulmoogra oil for....ab-332
tuberculosis, light baths for....ab-338
Leukemia, lymphatic, of skin....ab-334
Leukocytes, sedimentation speed of....ab-343
Liver, amebic abscess of....ab-341
in tuberculosis....ab-333
Longevity, factors of....*259
Lung gangrene....ab-340
Lymphatic glands, cancer of....ab-341
Malaria and blackwater fever....ab-337
epidemiology of....ab-338
pernicious, in Panama....ab-332
Mange not transferable from dog to man..325
Marriages....319
Medical Education, Registration....325
Medicolegal....329
Meningitis due to micrococcus catarrhalis..ab-331
Menorrhagia, blood during treatment of..ab-344
Menstruation, vicarious....ab-344
Mercuric chlorid, antidote to....ab-344
Metabolism, basal, in myxedema....ab-334
Metz, A., and the human eye....C-324
Micrococcus catarrhalis, meningitis due to....ab-331
Migraine, calcium lactate for....ab-337
Milk, mother's, effect of diet on....ab-331
Minute materials, possible potencies of...E-307
Monoplegia, crural, due to vascular lesion....ab-333
Mother and child, biologic oneness of....ab-344
Muscle fibers, laceration of....ab-344
Myxedema, basal metabolism in....ab-334
Negroes, medical school for, in South Africa....314
Neuralgia in arm....ab-342
trigeminal, unique symptom in....*302
Neurasthenia, traumatic....ab-338
Neurosyphilis, experimental....ab-344
New and Nonofficial Remedies....303
News....308
Nutrition disturbances in infants, classification of....ab-341
Ovary, irradiation of, and offspring....ab-344
Pancreas, toxic and active fractions in...ab-331
Parabiosis in study of deficiency diseases..ab-331
Paralysis, facial, diathermy of....ab-340
agitans, psychic symptoms in....ab-333
Paranoia, confusional....ab-346
Parathyroids, dysfunction of, in sprue..ab-337
effect of removal of....ab-331
Parkinsonism, postencephalitic....ab-342
Pellagra, conquest of....E-305
Peptic ulcer, jaundice with....ab-239
juxtapyloric ulcer....ab-342
perforated....*302
resection of stomach for....ab-346
Phenolsulphonephthalein output....ab-336
test....ab-340
Pineal gland syndromes....ab-239
Pituitary in diabetes insipidus....ab-336
Poliomyelitis....ab-342
Propaganda for Reform....321
Prostatectomy, mortality and morbidity in..*281
perineal, by modified technic....*287
Protein fever....ab-332
Psychiatry, blood ferments in....ab-346
Pulse wave velocity....ab-332
Queries and Minor Notes....325
Rachitis, urine in....ab-343
Radium emanation in therapeutics....ab-343
physical condition of persons engaged in work with....ME-327
Raynaud's disease....ab-341
Rectum cancers....ab-342
Respiration, tubular....ab-343
Respiratory tract, development of....ab-331
Rheumatism and carditis....ab-338
Roentgen ray destroys intestinal epithelium....ab-335
examination for prisoner....MI-330
in tissues, path of....ab-335
intestinal lesions produced by....ab-335
intoxication and injury to intestinal epithelium....ab-335
offspring after gynecologic irradiation....ab-341, ab-344
Salicylate, antiphlogistic effects of....ab-336
Sarcoma, chicken, metastasis of....ab-345
in small intestines....ab-346
Scarlet fever, etiology of....*301
immune reaction of....E-304
test for susceptibility to....*265
Schick test in children with adenoids...ab-341
Seminal vesicles, diseases of....*270
in arthritis....*274
Smallpox, blood in....ab-239
Social Medicine and Medical Economics....326
Sodium citrate, pharmacology of....ab-336
Spasmophilia, blood calcium in....ab-240
in infants....ab-340
Sprue, calcium deficiency in....ab-337
State Board Examinations....325
Stomach acidity in infants....ab-331
myoma of....ab-345
Streptococci, hemolytic, differentiation of..ab-334
Survivorship....MI-330
Symphysiotomy, subcutaneous....ab-346
Syphilis and chancroid....ab-239
visceral, treatment of....*299
with tuberculosis....ab-338
Tabes, experimental....ab-343
Taxation of physicians....ME-326
Tenia saginata in China....ab-337
Tetanus of new-born....ab-345
Thymus, persistent, in exophthalmic goiter....ab-341
Thyroid, effect of removal of....ab-331
Tissue growth and cell crowding....ab-335
Tonics and Sedatives....Adv. page 22
Tonsil, aspiration of....ab-338
Torsion spasm, progressive....ab-341
Trachea, chronic stenosis of....ab-343
Trephones, leukocytic....*255
Trypanosomiasis, prophylaxis against....318
Tsutsugamushi disease....ab-332
Tubercle bacilli in bile....ab-333
demonstration of....ab-334
Tuberculosis, auscultatory signs in....ab-333
after-care of....314
blood serum, agglutination of Flexner bacillus by....ab-333
exogenous reinfection....ab-345
"healers" of....316
in children, diagnosis of....ab-341
in Luxemburg....317
liver in....ab-333
nonspecific reactions in....ab-345
organic mercurials in....ab-333
pulmonary, evolution of....ab-239
pulmonary, influence of mediastinal displacement on....ab-338
secondary infection in....ab-333
vaccine, Martinotti's....317
vaccine, Poondorf's....317
Widal test in....ab-333
with syphilis....ab-338
Typhoid bacilli carriers....ab-343
emetin in....ab-334
intestinal lesions in....ab-239
Typhus, immunity after....ab-344
survival of virus of....ab-335
Venereal diseases in jails....ab-346
Vital statistics of 1923 in England....314
Vitamins, test for....ab-346
in atrophic infants....ab-343
Von Volkmann, death of....325
Weil-Felix reaction....ab-332
Widal test in tuberculosis....ab-333
Wounds, reactions during healing of....ab-343
Xanthoma of eyelid....ab-344

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LEUKOCYTIC TREPHONES *

ALEXIS CARREL, M.D.

NEW YORK

The growth of tissues probably depends on the presence in the pericellular fluid of substances necessary for the synthesis of protoplasm, and of hormones of the type called by Gley harmozones. The nitrogenous compounds required by tissues for building up protoplasm are believed to be amino-acids. The harmozones are secreted by certain cells, and their function consists in arousing other cells to activity. Their nature is utterly unknown. They act as catalysts, but do not build up protoplasm. The hypothetic character of our knowledge concerning the factors that determine growth can be attributed to the lack of methods permitting the study of cell nutrition. Recently, the development of technics [1] by which pure strains of cells could be isolated and maintained outside the organism in a condition of constant activity has rendered possible such an investigation. The experiments made by Ebeling and myself on the food requirements of cells in pure cultures brought to light the fact that epithelial and connective tissues do not obtain from blood serum the material necessary for the synthesis of protoplasm, but demand for that purpose certain substances contained in embryonic tissues and secreted by lymphocytes and possibly by other cells. The principles manufactured by certain cells and used by others for the building up of protoplasm have been called trephones, from τρέφω, I feed. They differ from the hormones which stimulate the cells to activity without possessing any nutrient property, but both trephones and hormones may be required for the growth of tissues. My purpose in this paper is to describe briefly the experiments which have led to the conception of trephones, and to discuss the function of these substances in physiologic and pathologic processes.

SYNTHESIS OF PROTOPLASM BY FIBROBLASTS AND EPITHELIAL CELLS, NOT FROM SERUM CONSTITUENTS, BUT FROM EMBRYONIC AND OTHER TISSUE JUICES

In the early studies of tissues in vitro, fibroblasts and epithelial cells proliferating in plasma or serum were supposed to feed on substances present in the culture medium. But Lewis [2] found that embryonic tissue cells multiply as readily in saline solution as in serum. Moreover, the volume of a tissue cultivated in plasma does not increase. Although the minute fragment of embryonic heart from which originated the first pure culture of fibroblasts proliferated for more than three months in plasma, its size progressively decreased until embryonic tissue juice was added to the medium and determined unlimited cell multiplication.[3] Connective tissue and epithelial cells surviving in plasma seem to use substances contained in the tissues themselves for their multiplication, as was noted by Burrows [4] some years ago. In the experiments that Ebeling and I [5] made recently on the effects of serum in different dilutions on the activity and duration of life of pure cultures of fibroblasts, it was found that fibroblasts live no longer in Tyrode solution containing various amounts of serum than in pure Tyrode solution. The presence of serum never increased the activity of the cells or the duration of their life. The same result was obtained when the medium contained a small amount of embryonic tissue juice. This fact shows that the hormones, which may possibly be present in embryonic juice, fail to enable the fibroblasts to feed on the nitrogenous constituents of serum. Thus, the activity displayed for a few days or weeks by fibroblasts cultivated in plasma depends necessarily on the nutrient substances stored within the tissue itself. Serum constituents are not used as a source of nitrogen by fibroblasts and epithelial cells in vitro. Therefore, plasma and serum cannot be considered as a culture medium, in the proper sense of the word, for these cells.

Fibroblasts and epithelial cells are maintained in a true state of cultivation only by embryonic tissue juices.[3] Whenever these juices are present, the volume of the tissue begins to increase. The cells can build an unlimited amount of protoplasm from certain constituents of embryonic juice. These growth-promoting substances are found also in extracts of adult tissues, such as muscle, thyroid and renal tissues, in extracts of leukocytes, and also in certain heterologous tissues.[6] The action of some of these extracts on fibroblasts was studied for long periods of time. During the first days, the effects of the varied juices are practically identical. But marked differences appear when their action is

* From the Laboratories of the Rockefeller Institute for Medical Research.

1. Carrel, Alexis: On the Permanent Life of Tissues Outside of the Organism, J. Exper. Med. **15**: 516 (May) 1912. Ebeling, A. H.: Measurement of the Growth of Tissues in Vitro, ibid. **34**: 231 (Sept.) 1921. Fischer, Albert: Three Months Old Strain of Epithelium, ibid. **35**: 367 (March) 1922. Ebeling, A. H.: Ten Year Old Strain of Fibroblasts, ibid. **35**: 755 (June) 1922. Carrel, Alexis, and Ebeling, A. H.: Pure Cultures of Large Mononuclear Leukocytes, ibid. **36**: 365 (Oct.) 1922. Fischer, Albert: Pure Strain of Cartilage Cells in Vitro, ibid. **36**: 379 (Oct.) 1922. Carrel, Alexis: Method for the Physiological Study of Tissues in Vitro, ibid. **38**: 407 (Oct.) 1923; Measurement of the Inherent Energy of Tissues, ibid. **38**: 521 (Nov.) 1923.

2. Lewis, Margaret R., and Lewis, W. H.: Cultivation of Tissues from Chick Embryos in Solutions of NaCl, $CaCl_2$, KCl and $NaHCO_3$, Anat. Rec. **5**: 277 (June) 1911.

3. Carrel, Alexis: Artificial Activation of the Growth in Vitro of Connective Tissue, J. Exper. Med. **17**: 14 (Jan.) 1913.

4. Burrows, M. T.: Some Factors Regulating Growth, Anat. Rec. **11**: 335 (Jan.) 1916-1917.

5. Carrel, Alexis, and Ebeling, A. H.: Multiplication of Fibroblasts in Vitro, J. Exper. Med. **34**: 317 (Oct.) 1921; Survival and Growth of Fibroblasts in Vitro, ibid. **38**: 487 (Nov.) 1923.

6. Carrel, Alexis, and Ebeling, A. H.: Action on Fibroblasts of Extracts of Homologous and Heterologous Tissues, J. Exper. Med. **38**: 499 (Nov.) 1923.

prolonged. Extracts of adult chicken tissues at first determine an increase in the mass of homologous fibroblasts but, after a few passages, the rate of growth decreases and the cells ultimately die. It is probable that adult tissues, as well as serum, contain substances toxic for the homologous cells, and progressively overcome the effect of the growth-promoting constituents. Aqueous extracts of leukocytes also contain growth-promoting substances. When leukocytes embedded in plasma are kept in a refrigerator for a few days, some activating substances diffuse into the serum. Leukocytes may be considered as storing within the adult organism embryonic growth-promoting substances.[7]

While fibroblasts and epithelial cells remain in a condition of cultivation only in embryonic tissue juices, lymphocytes and large mononuclears behave differently. When cultivated in embryonic tissue juices, they display great activity at first, but die after a short time. On the contrary, if the medium is composed of diluted serum, they remain alive and spread over a large area for more than a month.[8] It is obvious that they build up protoplasm from some constituents of serum, while neither fibroblasts nor epithelial cells possess this property. Thus, one tissue does not necessarily use the same substances for the synthesis of protoplasm as another tissue, and the nutritive requirements of epithelium and fibroblasts cultivated in vitro differ from those of macrophages.

Connective tissue, cultivated in a medium containing embryonic juices as the only source of nitrogen, increases extensively in mass. There is no doubt that embryonic juices do not act as a hormone, but take part in the synthesis of protoplasm. The nature of the nitrogenous compounds present in these juices and used by epithelial and connective tissue cells in the building up of protoplasm has not been discovered. But some of their properties have been known for ten years.[3] Embryonic tissue juice loses its growth-promoting effect after it has been shaken for several hours, or heated at a temperature of 65 C. for a few minutes. The substances that promote cell multiplication are as sensitive to heat as alexin and sensitizer. They are partly destroyed at 56 C. in thirty minutes, and when left in an incubator at 38 C. for forty-eight hours, their action is greatly weakened. They are unstable and easily destroyed by agents other than heat. They are sensitive to the action of radium and roentgen rays. Spontaneous deterioration occurs also under the influence of factors still unknown. The decrease in the p_H, which occurs spontaneously even at low temperature, prevents their stimulating action. But, even when the p_H does not vary, embryonic juices that have been kept in the refrigerator for several weeks lose some of the growth-promoting power. Filtration through a Berkefeld filter partly deprives the juices of their growth-activating substances, and these substances disappear completely after filtration through a Chamberland filter.[2] These facts have recently been confirmed by Drew.[9] Many attempts have been made to isolate from the embryonic tissue juices the substances used as a nitrogenous food by fibroblasts. Fractionate precipitation by alcohol, acetone and other substances did not lead to the separation of a more active moiety. The growth-activating substances always remain with the protein precipitate.

7. Carrel, Alexis: Growth-Promoting Function of Leukocytes, J. Exper. Med. **36**: 385 (Oct.) 1922.
8. Carrel, Alexis, and Ebeling, A. H.: Action of Serum on Lymphocytes in Vitro, J. Exper. Med. **38**: 513 (Nov.) 1923.
9. Drew, A. H.: Growth and Differentiation in Tissue Cultures, Brit. J. Exper. Path. **4**: 46 (April) 1923.

SECRETION OF GROWTH-PROMOTING SUBSTANCES, OR TREPHONES, BY LEUKOCYTES IN VITRO AND ALSO IN VIVO

The presence, in embryonic tissue juices and in glandular and leukocytic extracts from adult animals, of principles increasing the rate of multiplication of fibroblasts and epithelial cells suggested the possibility that these substances are secreted by leukocytes and endocrine glands. So far, it has been technically impossible to ascertain whether thyroid or ovarian cells living in pure cultures secrete the nitrogenous compounds necessary for fibroblasts and epithelial cells. But the properties of leukocytic secretions could be investigated.[10] Fragments of a film of white corpuscles obtained from chicken blood were cultivated in flasks. After a few days, the serum obtained from the cultures containing the leukocytes in active condition was found to promote cell multiplication to a greater extent than that of the controls. Simultaneously, the natural hemolytic action of the serum increased in the cultures containing active leukocytes. When a small amount of casein was added to the medium, the leukocytic secretions acquired a still greater growth-promoting power. It was evident that living leukocytes, spontaneously or under the influence of a foreign protein, secrete certain principles that promote the multiplication of homologous fibroblasts and destroy foreign erythrocytes.

Further experiments have been undertaken in order to ascertain whether leukocytes secrete their growth-promoting substances, not only in vitro, but also in vivo.[7] Aqueous extracts of inflamed connective tissue were found to increase the rate of firoblast proliferation. A peritoneal exudate containing many leukocytes, and ascitic fluid in which living macrophages were found, possessed a marked activating action on the growth of connective tissue. These experiments demonstrated that leukocytes can set free in vivo the growth-promoting substances which they manufacture and which are contained in the aqueous extracts. Thus, they are capable of nourishing connective tissue and epithelial cells.

PRODUCTION OF TREPHONES BY LYMPHOCYTES FROM SERUM CONSTITUENTS

Since macrophages live and multiply in serum, they probably synthetize trephones from some of the serum constituents. This assumption was proved by the following experiment:[8] A fragment of spleen was placed in a flask at a short distance from a pure culture of fibroblasts. As the medium consisted of serum, the fibroblasts stopped proliferating after a few days. Meanwhile, the leukocytes slowly invaded the medium and reached the neighborhood of the colony of fibroblasts. By the ninth day, the fibroblasts were beginning to degenerate; the cytoplasm was dark and charged with fat granules. Serum was then added to the medium, and the lymphocytes proliferated very actively, some of them reaching the fibroblasts. During the following days, the fibroblasts were transformed. They became slender and elongated at the same time that the cytoplasm decreased in volume, and they again began to proliferate and to migrate into the medium. A spontaneous rejuvenation of fibroblasts, after they had been cultivated in serum for eight days and had undergone degenerative changes, has never been observed previously. It can be attributed to the nearby presence of lymphocytes acting on the fibroblasts. The rate of

10. Carrel, Alexis, and Ebeling, A. H.: Leukocytic Secretions, J. Exper. Med. **36**: 645 (Dec.) 1922.

proliferation of fibroblasts has been observed to increase several fold when they grow near colonies of lymphocytes. In the foregoing experiment, an allied phenomenon took place. As it appeared after the lymphocytes had been cultivated in serum for more than ten days, the growth-promoting principle secreted by the latter cells must have been elaborated from substances contained in the serum, and not from their own reserves.

FUNCTION OF TREPHONES IN PHYSIOLOGIC AND PATHOLOGIC PROCESSES

Lymphocytes appear to be endowed with a function of primary importance in the nutrition of tissues. As is well known, fibroblasts and epithelial cells do not synthetize protoplasm from serum constituents, but are capable of obtaining from embryonic tissue juice certain substances which determine unlimited proliferation. Leukocytes which, like embryonic cells, contain growth-promoting substances, have the power to supply connective and epithelial tissues with the principles necessary for growth. The food material used by lymphocytes in the manufacture of the essentials which determine the multiplication of fibroblasts or epithelial cells comes from blood serum. Thus, lymphocytes and macrophages can be considered as mobile unicellular glands which transform some of the serum constituents into trephones and set them free in blood plasma or interstitial lymph as a food for fixed cells. They play the rôle of trephocytes, or nursing cells, for epithelium and connective tissue. As trephones are also present in the aqueous extracts of glandular and other tissues, it is permissible to suppose that endocrine glands, like leukocytes, may secrete nutrient substances for certain tissues, and not only hormones.

The conception of trephones, that is, of substances manufactured by certain cells and used as food material by other cells, is far from new. In 1867, Claude Bernard defined internal secretions as being nutrient secretions preparing immediate principles for cell nutrition, such as glycogen, albumin and fibrin. More than thirty years ago, Renaut was led by his anatomic studies to assume that lymphocytes bring to the fixed cells the food material they require, and that the life of the organism depends on their function. Recently, Jolly [11] concluded from his investigations on the lymphoid apparatus that lymphocytes store important chemical substances which are used by the organism more readily than are the materials from other tissues. Our experiments indicate that lymphocytes remain through life as a store of embryonic growth-promoting substances or trephones, which may cause a resumption of cell activity when it is needed. They are evidently endowed with a double function, destroying foreign substances and necrotic material, and promoting cell proliferation.

Leukocytes, according to their condition, set free substances of varied nature. Trephones are secreted by normal cells, or diffuse from dead cells before the onset of disintegration, while the ferment, described by Metchnikoff as macrocytase, and by Opie as lymphoprotease, probably does not come from normal lymphocytes. When macrophages grow in pure cultures, they wander through a meshwork of fibrin which remains undigested as long as they are in active condition. But when they die, digestion often takes place. Trephones probably disappear at a certain stage of cell degeneration. The substances which diffuse from disintegrating leukocytes may differ widely from trephones. They are often toxic. The fluid extracted from pus generally depresses cell proliferation. When a wound is covered with pus, the process of repair becomes less rapid and may stop entirely. It was recently observed that the development of an abscess in some part of the body brings about a decrease in the rate of cicatrization of an aseptic wound. A similar effect is obtained when sterile pus is injected under the skin of an animal while the healing of a wound is being observed. Dead leukocytes, according to their condition, may set free substances which are endowed with opposite properties.

Pathologic processes are often characterized by a resumption of activity of tissues that are more or less in a resting condition. In the healing of wounds and repair of fractured bones, fibroblasts that have ceased multiplying, possibly for many years, recuperate their embryonic growth energy. In case of infection, the production of antibodies is necessarily brought about by enhanced tissue activity. For many years, there has been much speculation concerning the mechanism that determines an increase of the inherent growth energy of a tissue when it is needed. But the explanation of this phenomenon was necessarily incomplete, as the conditions responsible for cell multiplication were unknown. Although we are far from understanding all the causes of tissue growth, we already know from observations of pure cultures of cells that growth energy depends on substances that are present in the pericellular fluid, and not on the energy derived from the ovum.[12] As long as the cells are supplied with these substances, they display unlimited powers of multiplication. But within the adult organism, fibroblasts do not find these substances and are not free to multiply as they do when cultivated in a medium containing growth-promoting principles. After pure cultures of fibroblasts, which double in volume every two days in vitro, have been grafted into an adult animal, they cease growing and disappear within a short time. If fibroblasts are cultivated in serum, their activity is also inhibited. Blood serum has a marked depressing action on fibroblasts and epithelial cells, which increases progressively with the age of the organism.[13] Since fibroblasts do not find in serum the substances required for the synthesis of protoplasm, they must receive the food material necessary for their proliferation from another source.

It is difficult to understand how an inflammatory irritant which, according to Virchow, would be responsible for the resumption of cell activity in pathologic processes, could furnish the cells with the material needed. The decrease in tissue tension, which Ribbert thought was the cause of the increased growth energy of a cicatrizing tissue, does not explain the resumption of cell activity. Weigert, while rejecting the hypothesis of Virchow, could not give any satisfactory explanation of the fact that injury of a group of cells is followed by proliferation of other cells. In his study of adaptation in pathologic processes, Welch expressed the idea that pathologic tissue growth could be attributed to the presence of chemical substances. This hypothesis is substantiated by the recent findings that cell growth energy depends on the concentration of trephones in the pericellular fluid. Thus, the substratum of formative stimulus may consist of trephones secreted by leukocytes or set free by dead muscle or gland cells

11. Jolly, J.: Le tissu lymphoïde considéré comme un tissu de réserve, Compt. rend. Soc. de biol. **83**: 1209 (July 31) 1920.

12. Carrel, Alexis: Contribution to the Study of the Mechanism of the Growth of Connective Tissue, J. Exper. Med. **18**: 287 (Sept.) 1913.

13. Carrel, Alexis, and Ebeling, A. H.: Age and Multiplication of Fibroblasts, J. Exper. Med. **34**: 599 (Dec.) 1921.

and capable of supplying tissues with the food material required for cell multiplication.

This hypothesis satisfactorily explains the mechanism of wound healing. It is known that an aseptic wound made on an adult animal by extirpating a flap of skin begins to cicatrize after two or three days. The resumption of cell proliferation may be attributed to the removal of resistance to growth as a consequence of the defect resulting from loss of tissue, or to an external factor. If regeneration is a direct consequence of the loss of tissue, the cicatrization of a wound protected against external irritation must take place normally. But we found that a wound completely free from débris of tissue and blood clots and absolutely protected from outside irritation does not heal.[14] Thus, regenerative stimulus does not depend on a release of tissue tension, as Ribbert thought. Neither does it come from tissue injury, according to the theory of Weigert. It seems that Virchow was right in attributing cell growth to an inflammatory irritant. But the following experiments showed that the irritant does not act directly on the tissues.

When the wound, instead of being protected against external irritation, was covered with a slightly irritating dressing, such as turpentine, a few staphylococci or dry gauze, cicatrization sometimes started in less than two days.[14] The irritant had apparently determined the onset of healing. Any irritant brings about the same result, as long as it does not injure the tissues. Therefore, its action on the cells is not direct. Gauze, turpentine or bacteria have never been observed in vitro to produce an increase in the rate of multiplication of fibroblasts. The irritant probably sets in motion a mechanism which determines cell proliferation. The effect of every mild irritant is to bring about the invasion of the tissue by leukocytes which are known to have the power of promoting cell proliferation. We may assume that the resumption of cell activity in wound healing is due to the trephones set free by the leukocytes. Then, Virchow's opinion was not entirely correct since an inflammatory irritant initiates cicatrization, not directly, but by the intermediary of the leukocytes. Leukocytic trephones probably supply the food material required for the production of new cells which is not obtainable from the blood plasma of an adult animal. Thus, the irritant does not act by itself but causes the embryonic reserves of the organism to be brought to the wound in the form of leukocytes.

Regeneration in lower organisms may also be determined by certain cell secretions. Loeb [15] observed that, in *Tubularia,* endodermic cells gather at the end where a new polyp is about to form, and probably set free substances required by proliferating cells. The rapid growth of limbs in metamorphosing tadpoles is aided, according to Jordan and Speidel,[16] by the presence of lymphocytes. But it is certain that regeneration takes place through more than one mechanism. Actively growing tissues and possibly glands that contain growth-promoting substances do not need lymphocytes for repair. In replacing lost parts, the organism certainly uses various methods.

When cells degenerate and die, as, for example, in myocarditis or interstitial nephritis, they are replaced by fibrous tissue. Fibrosis is known to follow gland and muscle cell destruction. Since these cells set free substances that can be used as food material by the fibroblasts, the process of sclerosis appears to be automatic; principles diffusing from dying or dead cells are used by fibroblasts for multiplication. This assumption is substantiated by the following experiments: Fragments of pectoral muscle were heated at 56 and 100 C., and grafted under the skin of a chicken, a fresh muscle fragment acting as a control. After a few weeks, the fragment that had not been heated was surrounded by a capsula of connective tissue. A thinner capsula had developed around the tissue heated at 56 C., and none around the muscle heated at 100 C. It seemed plausible that the substances set free by the muscle were used by fibroblasts for the production of the capsula. However, it is obvious that other mechanisms are possible, namely, the gathering of lymphocytes around the foreign bodies, and the setting free of trephones, or the direct transformation of lymphocytes and large mononuclears into fibroblasts.

Although no complete explanation of these phenomena can be given at the present time, it seems that the resumption of cell activity which brings about adaptation in certain pathologic processes requires the presence in tissue fluids of growth-promoting substances. Serum and interstitial lymph do not allow fibroblast proliferation in the adult animal. But, when cell multiplication is needed, the inhibition due to serum must disappear, and this effect can be brought about by leukocytic trephones.

Possibly trephones are present, not only in interstitial lymph, but also in blood plasma. Although serum inhibits the multiplication of fibroblasts, it contains a small amount of growth-promoting substances, the effect of which is shielded by more powerful inhibiting substances. The growth promoting substances have been isolated from serum by precipitation with carbon dioxid.[17] They are much less abundant in the serum of an old animal than in that of a young one, and the increased inhibiting effect of serum in old age is partly due to their disappearance.[18] However, the growth-inhibiting effect of serum is also found to vary under the influence of conditions other than old age. The growth index of serum is temporarily modified by infection or suppuration. These variations are certainly due to complex influences, such as toxic substances set free by bacteria, or disintegrating structures, and growth-activating substances secreted by leukocytes and tissues. Murphy [19] recently found that, after an animal has been exposed to roentgen rays, lymphocytes divide in its serum more readily than in that of an animal which has not been irradiated. This effect may be attributed to the destruction or stimulation by roentgen rays of lymphocytes and the setting free of trephones in the plasma, which then becomes less inhibiting for cell proliferation. A similar weakening of the growth-restraining power of plasma under the influence of trephones may cause, in part, the response of the organism to protein therapy. It is possible that the growth-promoting properties of leukocytes are utilized by the diseased organism as fully as is their power of opposing bacteria and other foreign substances.

14. Carrel, Alexis: Cicatrization of Wounds, XII, Factors Initiating Regeneration, J. Exper. Med. 34: 425 (Nov.) 1921.
15. Loeb, Jacques: The Organism as a Whole From a Physicochemical Viewpoint, New York: G. P. Putnam's Sons, 1916, p. 170.
16. Jordan, H. E., and Speidel, C. C.: Blood Cell Formation and Distribution in Relation to the Mechanism of Thyroid-Accelerated Metamorphosis in the Larval Frog, J. Exper. Med. 38: 529 (Nov.) 1923.
17. Carrel, Alexis, and Ebeling, A. H.: Antagonistic Growth-Activating and Growth-Inhibiting Principles in Serum, J. Exper. Med. 37: 653 (May) 1923.
18. Carrel, Alexis, and Ebeling, A. H.: Antagonistic Growth-Principles of Serum and Their Relation to Old Age, J. Exper. Med. 38: 419 (Oct.) 1923.
19. Murphy, J. B.; Liu, J. Heng, and Sturm, E.: Studies on X-Ray Effects, IX, Action of Serum from X-Rayed Animals on Lymphoid Cells in Vitro, J. Exper. Med. 35: 373 (March) 1922.

PRELIMINARY ACCOUNT OF AN INVESTIGATION OF FACTQRS INFLUENCING LONGEVITY*

RAYMOND PEARL
BALTIMORE

Since its establishment, a major part of the research activities of the Department of Biometry and Vital Statistics of the School of Hygiene has been devoted to the study of life duration as a general biologic problem. We have attacked and are now working at this problem in a variety of ways, experimental, statistical, pathologic, historic and others.[1] As time goes on, the results of these various lines of inquiry will be published. The present paper is designed to show something of the potential significance and promise of what is, in some of its aspects at least, a novel method of approaching the general problem. It will be followed, unless something quite unforeseen prevents the accomplishment of the task, by detailed and definitive reports as the work progresses.

The problem of life duration is one of great practical as well as theoretical importance. Normal human beings are directly and vitally interested in the duration of their own individual lives. They take what amounts in the aggregate to a vast lot of pains to safeguard, as far as is humanly possible, the continuation of their individual lives. The object of hygiene and preventive medicine, in the last analysis, is the extension or prolongation of life in individuals, and, by summation, collectively. Some of the more direct and obvious ways of doing this are well understood. To their successful practice we owe probably a considerable part of the improvement in the rate of human mortality which has been going on for a long time, but notably during the last century. But beyond all the specific ameliorative measures that preventive medicine is able to bring to bear, there is virtually universal agreement among medical men that his general manner of living—his habits of life in the broadest sense—have an influence in determining how long an individual shall live. The science of personal hygiene, so far as it is a science, is an attempt to codify such knowledge as exists about this element or factor in the biology of human life. There is a wealth of literature on the subject beginning with Aristotle and coming down through the ages, with such outstanding names at intervals as Cornaro and Metchnikoff. In the main, however, these contributions can hardly be said to conform to the canons of exact science. They rather register the crystallizations of folkways and mores, on the one hand, and the opinions of more or less wise individuals, on the other hand.

Can we not do better than this in the direction of making an advance in truly scientific knowledge pertinent to this fundamentally important problem? It is obvious that nature offers us a very direct way of attacking the problem. There are always in existence, and presumably always have been since the human family emerged from its zoological background, a small but select company of individuals who are living and in possession of their principal faculties at extremely advanced ages, near the upper limit (so far as yet observed) of the human life span. These people may be regarded as, in some sense, experts in the art of living. At any rate, they have so practiced this art as to survive much longer than the vast majority of their fellow men. In a real, unique and exculsive sense their lives are an exemplification of what longevity, as concretely practiced and experienced, actually is. If we had a detailed and quantitatively accurate record of the life history of each of a considerable number of such persons, we might then reasonably expect, by the application of proper statistical methods, to gain a sound knowledge of the more important of those factors in the conduct of life which conduce to its extension. This prediction seems reasonable, because it is bound to be true that any factors in the case which are of major importance will be found to be common in greater or less degree to a very large number, if not to all, greatly extended lives. There is also the possibility, if not probability, that by the examination of such a mass of statistical material it might be found that some of the elements in the conduct of life, or of practical personal hygiene, which are now held to be of considerable importance might be found to be of little or no significance, because there might be found a great number of cases of extreme longevity in which these factors were not present at all.

How shall we practically get such a body of evidence for statistical treatment? It occurred to me to make an experiment along this direction by taking advantage of a well recognized trait in human psychology; namely, the widespread and deep interest which people have in the mere fact of great longevity. When any one passes the age of 95 years, and particularly when any one reaches or passes the century mark, he or she is extremely likely, in this enterprising country at least, to receive a visit from a reporter, and be made the subject of a newspaper article, illustrated if possible. Some two years ago I subscribed to a bureau for newspaper clippings of all cases of persons living at 95 years of age and over. The plan then was, as these clippings came in, to send to all persons so discovered a questionnaire form with the request that they, or some one of their relatives in possession of the necessary facts, answer the questions on the blank.

This plan was begun as an experiment, there being great doubt on two points: first, as to whether any one would take the trouble to reply at all, since no reward was offered for so doing. The appeal was made simply to an intelligent altruistic spirit. It was stated that we were interested in investigating cases of extreme longevity, and that they were the persons most able to help us in such a project. In the second place, one had misgivings as to the accuracy and reliability of the information that might be given if the blanks were filled out and returned. There seemed to be no way of forming a judgment on these points so good as to try the case, by sending out the blanks to all such extremely old living persons of whom we could learn.

It may be said at once that two years' experience has demonstrated beyond question that the value and validity of the plan far transcend even the most optimistic hopes that were entertained at the outset. The percentage of replies has been large. While we have not kept statistics on the point because of no permanent interest, it is our opinion that we received usable histories (i. e., in which the records as to age, etc., will stand the test of critical investigation) on at least a third of the inquiries sent out. This is a large proportion when one remembers the inaccuracies of reporting addresses, names, and the like, in the original newspaper accounts; the fact that all degrees of education,

* Papers from the Department of Biometry and Vital Statistics, School of Hygiene and Public Health, Johns Hopkins University, No. 94.

1. A general summary of these studies up to 1920 is given by Pearl, Raymond: The Biology of Death, Philadelphia, J. B. Lippincott Company, 1922. Separate papers dealing with particular phases of the work have appeared in various journals, especially the American Naturalist and the American Journal of Hygiene.

and probably also of intelligence, are represented in the subjects of the original clippings; and, finally, the fact that in the majority of cases the subjects at these extremely advanced ages must ask the aid of some one else, even though they themselves are interested in replying to our questions.

The painstaking accuracy with which the detailed information called for has been given in the majority of cases has been one of the great surprises of the work. More will be said on this point as we proceed and can exhibit the evidence, but in general it may be stated that in every case in which we have been able to check up dates and the like from town records (which is notably true in cases of persons born in the New England states) we have found the statements as given by the family to be absolutely accurate. The best evidence, however, in a broad sense, is the internal evidence of the returns themselves. The transparent honesty and obvious pains taken to look up family records, which rests on an apparently widespread sense of the fundamental importance of accuracy in anything to which the label "scientific" is attached, and a real sense of altruistic helpfulness, are outstanding features of the histories, considered as a group. The questionnaire form used in this work is reproduced here in facsimile.

This blank is much more detailed and comprehensive in the information called for than the one with which the work was started as an experiment. The blank here shown was put into use after more than a year's experience had demonstrated that it would be possible to employ a more comprehensive blank without cutting down the number of returns. It will be noted that the information covered in the blank relates to the following broad categories:

1. *Heredity.* Ages and cause of death of (*a*) parents, (*b*) grandparents, (*c*) sibs, (*d*) children of the individual.
2. *Physical environment.* Occupation, places of birth and residence.
3. *Habits.* Alcohol, tobacco, sleep, diet, work.
4. *Health.* Diseases.
5. *Race.*
6. *Constitution.* As indicated by build, and other data.

THE JOHNS HOPKINS UNIVERSITY
SCHOOL OF HYGIENE AND PUBLIC HEALTH

Investigation of Longevity

By filling in the information asked for on this form, you will be greatly aiding the program of our investigation as to the factors which influence longevity. If for any reason you are yourself unable to write in the information desired, will you not please get someone in your household to fill it in for you. This form, after filling out, should be returned in the addressed stamped envelope enclosed herewith to DR. RAYMOND PEARL, School of Hygiene and Public Health, Baltimore, Maryland

NAME

ADDRESS

WHERE WERE YOU BORN? WHEN WERE YOU BORN?

If born abroad in what year did you COME TO THIS COUNTRY?

How OLD were you when you came?

How many BROTHERS did you have? How many SISTERS did you have?

Are any of your brothers and sisters alive now?

How MANY TIMES have you been MARRIED?

What was your AGE when MARRIED?

DATE of MARRIAGE?

Give NAME and AGE AT DEATH of each of your CONSORTS (HUSBAND or WIFE)

Was your CONSORT'S (husband's or wife's) FAMILY especially LONG-LIVED?
(Give any particulars that you know of.)

How many CHILDREN have you had? BOYS? GIRLS?

If you were married more than once specify CHILDREN BY EACH HUSBAND OR WIFE

How many of your CHILDREN are NOW LIVING?

How many GRANDCHILDREN have you had?

How many of your GRANDCHILDREN are NOW LIVING?

How many GREAT-GRANDCHILDREN have you had?

YOUR FAMILY

RELATIVE	Put in this column the AGE OF THE RELATIVE AT DEATH, OR IF LIVING, the AGE NOW.	Put in this column the CAUSE OF DEATH so far as you know it. If person is still living, write "LIVING"
Your FATHER		
Your MOTHER		
Your FATHER'S FATHER		
Your MOTHER'S FATHER		
Your FATHER'S MOTHER		
Your MOTHER'S MOTHER		
Your CHILDREN (list each child separately by NAME)		
1st		
2nd		
3rd		
4th		
5th		
6th		
7th		
8th		
9th		
10th		
11th		
12th		
Your BROTHERS and SISTERS (list each one separately) NAME		

Blank forms used in recording histories.

Since the work started, more than 300 histories have been returned, each of which contains a sufficient amount of information to make it usable in greater or less degree in the final statistical study. The response has been so general and cordial that it is intended to go on until a thousand usable case histories have accumulated. One purpose in presenting this preliminary account of the work at this time is to bring to the attention of practicing physicians the fact that this investigation is in progress, in the hope that some may be sufficiently interested to put me in touch with cases of extreme longevity (age 95 and over) that they may know of in their practice. Obviously, no particular virtue resides in the newspaper method of getting initial contact with cases. The sort of quasipersonal introduction that a physician might give us to his cases would be far better.

SOME OF THE INFORMATION SUPPLIED BY THE FIRST FIFTY SUBJECTS

In order that the reader may gain an idea of some of the extraordinary characteristics of this material, I have made a slight preliminary statistical analysis of Cases 1 to 50, inclusive. They serve to give some indications of the general trend which the more complete data will show.

Table 1 shows the age distribution, sex and marital status of fifty-one persons comprised in the first fifty histories. The reason there are fifty-one persons is that one history (No. 16 and 16 A) includes husband and wife, each 92 years of age.

PERSONAL HABITS AND HEALTH

To what extent have you USED ALCOHOLIC BEVERAGES during your life?

WINE? BEER?

WHISKEY or other SPIRITS?

To what extent and in what form have you USED TOBACCO?

PIPE? CIGARS?

CIGARETTES? CHEWING?

SNUFF?

How has your HEALTH been generally throughout life?

Have you ever had MEASLES? SCARLET FEVER? WHOOPING COUGH?

TYPHOID FEVER? MALARIA? SMALL POX? PNEUMONIA?

DIPHTHERIA? GOITER? OTHER SERIOUS ILLNESS?

Have you ever undergone a SURGICAL OPERATION?

If so, please state its NATURE, and the DISEASE for which it was undertaken?

WHAT WAS YOUR AGE AT THE TIME?

Please state any other DETAILS ABOUT YOUR HEALTH which you think might be of interest.

What have been your general HABITS during life as to EATING, DRINKING, SLEEPING and WORKING?

TO WHAT DO YOU CHIEFLY ATTRIBUTE YOUR LONG LIFE?

RESIDENCE, OCCUPATION, ETC.

In what PLACES have you RESIDED at different times in your life?

Have you LIVED mostly in the COUNTRY or CITY?

What OCCUPATIONS have you followed at different times during life?

To what extent have you done HARD MANUAL LABOR?

What is your RELIGIOUS FAITH?

To what RACE STOCK (English, Scotch, Irish, German, French, etc.), do you chiefly belong?

What is your HEIGHT? AVERAGE WEIGHT?

How has your WEIGHT CHANGED since you were 25 years of age?

What, in general, has been your BUILD DURING ADULT LIFE?

A. THIN AND LEAN?

B. MODERATELY THICK-SET OR CHUNKY?

C. DISTINCTLY FAT?

BY WHOM WAS THIS BLANK FILLED OUT?

WHAT IS YOUR RELATION TO

PLEASE GIVE ME THE NAME AND ADDRESS OF ANY OTHER RELATIVE WHO MIGHT BE ABLE TO FURNISH ADDITIONAL OR MISSING INFORMATION

Blank forms used in recording histories.

From this table the following points are to be noted:

1. As a group, these are extremely long lived persons. Theoretically, according to the plan, all should be 95 or over. Practically, eight (five men, three women) are under 95, but 90 or over. This came about simply from the fact that these eight persons with whom we got in contact were of the ages stated, but as their histories were satisfactory as to completeness and accuracy there seemed no particular reason to reject them, since even 90 is a respectable age, to which only about nineteen persons in 1,000 born alive manage to attain. The mean ages of the persons in Table 1 are: total men, mean age, 97.98 ± 0.49 years; total women, mean age 98.96 ± 0.37 years. The women, as would be expected, are older than the men, by the amount of 0.96 ± 0.61 year. It cannot be denied that in this material we are dealing with a group of excessively aged persons, and, most important of all, they were all[2] still alive at the time of our correspondence with them.

2. Twenty out of the fifty-one persons (thirteen women, seven men) are centenarians, the oldest, a man, being 105. Eleven out of the twenty-four women are seen to be in the age group 100. This might be thought at first sight to indicate an error in the records, to show, in short, a marked tendency to state the age of any decidedly old woman as the round number 100. This is not at all the explanation, however. The records give the actual birthday, in year, month and day, of each of these persons, and these dates have been checked in most instances against some other record. The eleven women in this class range all the way from 100.00 years to 100.99 years in age. We are particularly critical of all cases in which the age works out to 100 or more. Why, then, does it happen that in Table 1, thirteen of the twenty-four women are 100 years or over in age, while only seven out of twenty-seven men are centenarians? The chief reasons, I think, are these: (*a*) Fifty-one is a small statistical group. With a larger number of cases, the disparity between males and females in proportion of centenarians will in some measure disappear, as the result of more adequate sampling. (*b*) The method of getting in touch with cases through newspaper reports tends somewhat automatically to bring forward an unduly large number of cases of women just a hundred

2. With the exception of one person who died during the course of our correspondence with her family.

years old. The reason is that whereas any man over 90 is at any time likely to become the subject of a newspaper article because of something he does, some activity that attracts attention because of his great age, a woman of the same age is not likely to attract any public attention until her hundredth birthday is imminent. The celebration of a hundredth birthday is practically certain to be talked of in the community, and the woman who is about to celebrate it, however blameless and retired the life she has lived before then, is sure to "get in the paper." The man who at 98 is seen hoeing his corn patch, or who at 97 is heard making a speech at an annual meeting of a company of which he is a director, attracts attention by the act to his age, and gets prompt newspaper publicity. The woman of 97 or 98 may in her way be just as active, but the activity is not usually of a sort to attract the attention of the public. She is active inside the home. But when she is about to become a centenarian, the case is altered. Fewer than five females in every 10,000 born alive ever get to be 100 years old. To have one such in the family is indeed a distinction, and by any family with proper pride is publicly announced. Consequently, we are bound to have in any set of records of longevity, assembled through newspapers as the initial source of discovery of the persons, a disproportionate number of women at or near exactly 100 years of age.

TABLE 1.—*Age, Sex and Marital History of Fifty-One Persons Living at Age 90 or Over*

	Men						Women				
	Never Married	Married			Total Married	Total Men	Never Married	Married		Total Married	Total Women
Age		1	2	3				1	2		
90	..	1	..	..	1	1	..	..	..	..	..
91	..	..	..	..	..	..	..	..	..	..	..
92	..	1	1	..	2	2	..	1	..	1	1
93	..	..	..	1	1	1	..	..	..	..	..
94	..	1	..	..	1	1	..	2	..	2	2
95	..	2	..	1	3	3	..	..	1	1	1
96	..	2	2	..	4	4	..	1	..	1	1
97	..	2	1	..	3	3	..	3	..	3	3
98	..	2	1	..	3	3	..	1	1	2	2
99	1	1	..	..	1	2	..	..	1	1	1
100	..	..	..	..	..	..	2	9	..	9	11
101	..	1	..	..	1	1	..	..	..	..	..
102	..	2	1	..	3	3	..	1	..	1	1
103	..	1	..	..	1	1	..	..	..	..	..
104	..	..	1	..	1	1	..	1	..	1	1
105	..	1	..	..	1	1	..	..	..	..	..
Totals	1	17	7	2	26	27	2	19	3	22	24

TABLE 2.—*Age at Death of Parents of Subjects in Table 1*

	Father		Mother, Not Accidental
Age at Death	Accidental (Trauma, etc.)	Not Accidental	
25 to 29	..	..	2
30 to 34	..	1	..
35 to 39	..	2	2
40 to 44	1	2	..
45 to 49	1	1	2
50 to 54	..	..	1
55 to 59	..	4	1
60 to 64	..	4	..
65 to 69	1	3	5
70 to 74	2	..	2
75 to 79	1	6	8
80 to 84	..	5	9
85 to 89	1	4	5
90 to 94	..	2	2
95 to 99	..	2	2
100 to 104	..	1	..
Totals	7	37	44

more times. Young's [3] table of thirty centenarians gave twenty-one women and nine men. Of the twenty-one women, the marital status was known in nineteen, and thirteen of these were single. But his method of establishing first knowledge or contact with the cases was through the records of insurance companies, a method calculated in England certainly to lead to a disproportionate number of spinster centenarians, as compared with a random sample of the general population. From the data of the present study one cannot infer anything whatever as to the frequency of centenarians in the general population. Too many selective acts have gone into the gathering of the material. I doubt very much whether Young's material gives any more reliable picture of centenarianism in the general population, because an insurance company is no better sampler of centenarians, than the newspapers, if as good.

Table 2 gives the distributions of ages at death of the parents of forty-four out of the fifty-one subjects. This information is lacking in the other seven cases. The deaths are separated into two groups: those due to accidental traumatism, and poisonings, which were purely accidental in character and had no relation to the inherent ability of the person to live, on the one hand; and all other causes, on the other hand.

TABLE 3.—*Mean Age at Death of Parents*

Class	Mean Age of Father at Death	Mean Age of Mother at Death	Authority and Comment
English Quakers.	68.37 ± 0.31	67.95 ± 0.33	Beeton and Pearson (Biometrika 1:60, 1901); parents of adult sons
English Quakers.	69.55 ± 0.27	68.70 ± 0.30	Beeton and Pearson: parents of adult daughters
Baltimore working class	69.83 ± 0.97	67.52 ± 0.85	Pearl (Am. J. Hyg. 3:78, 84 [Jan.] 1923); parents of noncancerous persons*
Baltimore working class	63.51 ± 0.48	64.72 ± 0.52	Pearl: parents of nontuberculous persons†
Whitney family..	68.61 ± 0.72	.....	Unpublished data in this laboratory

* Having the same age distribution as a group of persons dying of cancer.

† Having the same age distribution as a group of persons dying of tuberculosis.

Parents are, of course, by virtue of the fact itself, a selected class in respect of longevity. They can have had no infant or childhood mortality. Therefore their mean age at death is bound to be higher than that of the general population. Unfortunately, we have few data that are satisfactory regarding the normal age at death of parents. Table 3 gives what is available.

It is evident that all these values are in close agreement, except that the parents of the tuberculous are shorter lived than any of the other groups. This is in accord with the conclusion already reached [1] that such persons (parents of persons dying of tuberculosis) are constitutionally weak.

The means for the parents shown in Table 2, taking nonaccidental deaths only, are: mean age at death of fathers of persons living at 90 or over, 71.15 ± 2.01; of mothers of persons living at 90 or over, 72.73 ± 1.73. Owing to the small number of cases in this preliminary sample, the probable errors of these means are large—so large that it is idle to attempt any judgment as to whether the parents of nonagenarians and centenarians are significantly longer lived than parents in general. This question can only be settled as more ample material is analyzed. But considering samples only,

3. Young: On Centenarians and the Duration of the Human Race, London, 1905.

and not making any inferences from them to general populations, it is seen that the fathers of our long-lived group had a mean age at death 2.54 years higher than that of fathers in the Whitney family (which is probably the most representative because least selected group of fathers in Table 3). The mothers of our long lived subjects had a mean age at death 4.03 years higher than that of the Quaker sample of mothers of adult daughters, which is the group of mothers in Table 3 probably least selected, and certainly the group showing the highest mean age at death. If we reason that by taking persons 15 and over we make something like the same cut-off of infant and childhood mortality that being a parent necessarily does (since persons 15 years of age are sometimes actually parents, as each year's birth returns show), then we have for the mean duration of life of males who survive to age 15, 61.66 years, and for females, 63.87 years. The means for the parents of our long-lived subjects are obviously much above these figures. But, clearly, being a parent means something more in respect of expectation of life than cutting off the mortality prior to age 15. This is demonstrated by Table 3.

TABLE 4.—*Age at Death of Grandparents of Subjects in Table 1*

Age	Male Grandparents	Female Grandparents
30 to 34	..	1
35 to 39	1	1
40 to 44	..	1
45 to 49	..	..
50 to 54	1	..
55 to 59	..	..
60 to 64	1	1
65 to 69	..	..
70 to 74	2	2
75 to 79	3	3
80 to 84	7	7
85 to 89	3	4
90 to 94	7	8
95 to 99	2	2
100 to 104	3	3
105 to 109	1	..
110 to 114	1	..
Totals	31	33

Table 4 gives the age at death of sixty-four grandparents of the subjects in Table 1, all for which data are available in the first fifty histories. Since only one death was accidental (occasioned by a fall of a woman 96 years old) it was thought unnecessary to have separate accidental and nonaccidental columns.

From these distributions we find the mean age at death of thirty-one male grandparents, 85.08 ± 1.80 years; of thirty-three female grandparents, 82.50 ± 1.97 years. Obviously, these are high ages at death. There is no purely arithmetical or statistical reason why grandparents as a class should show a higher mean age at death than parents. That they do so in this material suggests that there is a biologic reason. This first sample of data here presented suggests something like the skipping of a generation in the inheritance of extreme longevity, but this can be regarded for the present as only the merest suggestion, to be tested carefully from more ample material.

The data for the duration of life of the sibs (brothers and sisters) of the subjects of Table 1 are presented in Table 5. In making up this table only completely recorded sibships were included. To include partly recorded sibships would produce a false result because of undue weighting of adult and advanced ages. In a few cases, individuals were recorded as having died "in infancy," or "in youth." In the former case they are entered in the 0-4 class, and in the latter in the 10-14 class.

It is apparent at the first glance that the living brothers and sisters of the subject group are themselves unusually long lived. Of the brothers, 6.4 per cent. are still living, at a mean age of 78.21 ± 2.56, while, of the sisters, 13.9 per cent. are still living at a mean age of 78.57 ± 2.42 years.

How do the sibs of extremely long-lived persons, taken as a whole, compare in respect of duration of life with the general population? Here we can compare with the life table directly because brothers and sisters are not necessarily or automatically a long-lived group, as are parents. To take the worst case possible, we may combine the living with the dead of Table 5 and calculate a mean to compare with the life table. The dead sibs in Table 5 are dead at the ages indicated; the living sibs, being alive, must necessarily die at an age somewhat higher than their present living one. Hence, by combining the living distributions with the dead we shall get mean figures for the whole which will necessarily be below what will be the final figures after all the sibs have died. Proceeding in this way we have: mean duration of life (to date) of all brothers of subjects, 67.59 ± 1.62 years; of all sisters of subjects, 62.90 ± 1.84 years.

For dead sibs alone, which represent the relatively short-lived members of the sibship, we have: mean duration of life of dead brothers, 66.86 ± 1.71 years; sisters, 60.37 ± 2.04 years.

From Glover's[4] life tables, original registration states, 1910, we have: mean duration of life of white males, 50.23 years; of white females, 53.62 years.

TABLE 5.—*Age at Death, or at Present Time if Living, of Sibs of Persons in Table 1, in Cases in Which the Data for Total Sibship Are Completely Recorded*

	Brothers			Sisters	
		Dead			
Age	Living	Accidental	Not Accidental	Living	Dead, Not Accidental
0 to 4	..	..	7	..	6
5 to 9	..	..	1	..	..
10 to 14	..	..	1	..	5
15 to 19	..	1	..	..	1
20 to 24	..	..	2	..	1
25 to 29	..	..	..	..	5
30 to 34	..	1	..	..	1
35 to 39	..	..	2	..	2
40 to 44	..	1	3	..	4
45 to 49	..	..	..	2	2
50 to 54	..	..	5	..	4
55 to 59	1	..	2	..	2
60 to 64	..	2	5	..	7
65 to 69	..	1	7	..	4
70 to 74	1	..	3	..	7
75 to 79	1	1	13	4	6
80 to 84	3	2	22	2	12
85 to 89	..	..	10	5	10
90 to 94	1	..	9	1	6
95 to 99	..	..	1	..	1
100 to 104	..	..	..	..	1
Totals	7	9	93	14	87

It appears, then, that the brothers of our extremely long-lived persons live on the average at least 17⅓ years longer than the general population male. The sisters of these long-lived persons live at least 9.28 years, on the average, longer than the general population female. These are substantial differences.

4. Glover, J. W.: U. S. Life Tables, 1890, 1901, 1910 and 1901-1910, Washington, Government Printing Office, 1921.

If we do not credit the living sibs to the sibship at all, the means (all dead) are still much above those of the general population from the life table.

It is seen that, even in so small a sample as fifty cases, both the direct and the collateral kinsfolk of extremely long-lived people are themselves longer lived than the class of the general population with which they are comparable. This is further, and extremely cogent, evidence of the inheritance of duration of life.

We may consider briefly two other points. These are: (1) the use of alcohol and tobacco in this group of long-lived persons; and (2) their fertility.

Of twenty-six men who furnished information on the point, fourteen (54 per cent.) had used alcohol as a beverage during their lives, and twelve (46 per cent.) had been total abstainers. The mean present age of the users is 97.2 years, and of the nonusers, 97.8 years. It thus appears possible to attain great age either with or without the use of alcohol as a beverage. One of the fourteen users admits excessive use of alcohol for some years of his life. The others profess to have been, and probably were, moderate drinkers.

TABLE 6.—*Size of Sibship in Subject's Generation and in the Generation to Which His (or Her) Children Belong (Married Subjects Only)*

Number of Children in Family	Subject's Children	Subject's Parents' Children (Subject's Own Sibs.)
0	1	..
1	2	1
2	3	1
3	1	4
4	4	4
5	9	3
6	4	4
7	5	4
8	4	6
9	5	5
10	3	1
11	3	6
12	1	4
13	1	2
14	..	1
15	..	1
16	2	..
17	..	..
18	..	..
19	..	..
20	..	..
21	..	..
22	..	..
23	..	..
24	..	1
Totals	48	48

Of nineteen women furnishing information on the point, thirteen (68 per cent.) were total abstainers, with a mean present age of 98.8 years. Six (32 per cent.) were moderate users, with an average present age of 98.7 years. These figures confirm those from men, with the increased proportion of total abstainers which would be expected among women.

Of the twenty-six men, six smoked, five chewed, and two both smoked and chewed tobacco. The remaining thirteen (50 per cent.) have never used tobacco in any form. Of twenty-one women, only one has used tobacco, and she has smoked all her life. Again it appears that the use or nonuse of tobacco is equally compatible with the attainment of great longevity.

Considering married subjects only, the histories show that twenty-five persons who were total abstainers had 169 children (eighty-four male, eighty-five female), giving an average of 6.76 children per family. Twenty persons who used alcohol as a beverage had 150 children (seventy-nine male, seventy-one female), giving an average of 7.5 children per family. The fertility is thus seen to be slightly higher in this sample among the alcohol users, but no stress is to be laid on this difference, because of the smallness of the sample.

The absolute fertility of these long-lived persons is high, considering that they have lived in an era of generally declining birth rates. In this connection it will be of interest to examine into the matter still more fully. In Table 6 are given the sizes of the subject's family and of his parents' family, from which may be seen the magnitude of any change in fertility that may have occurred in passing from the earlier to the later of these generations.

From Table 6 we have the following biometric constants:

Subject's children: mean number, 6.83 ± 0.35; standard deviation, 3.56 ± 0.25.

Subject's parents' children (his sibs): mean number, 8.21 ± 0.40; standard deviation, 4.11 ± 0.28.

Difference in means, -1.38 ± 0.53.

Difference in standard deviation, 0.55 ± 0.38.

It is at once evident that these long-lived people both belonged to and had large families. While there is a drop in fertility in passing from the subject's parents' generation to that of the subjects themselves, this drop cannot be regarded, on the basis of this sample, as statistically significant, and certainly it is smaller than would have been expected on general grounds. All recent studies indicate that there has been generally a large decline in fertility in the century covered by the lifetime of the persons forming the material of this study. These long-lived persons evidently in this respect, as in others, are differentiated from the general population.

COMMENT

In this first report, all that it is hoped to do is to give, in the first place, some indication of the value of this material for the study of various biologic elements in the problem of longevity, and to solicit the help of physicians in getting additional data. A sample of fifty cases is too small to permit any definite conclusions. But certain general trends are apparent even in this meager material. The great importance of heredity as a factor in extreme longevity is made perfectly clear, even in fifty cases. That this fact will be borne out and extended as more and more cases are brought under review seems certain. But the most important thing is that when we have a thousand cases like the fifty here dealt with, we shall be able to evaluate quantitatively the rôle played by each of a whole series of different factors, innate and environmental, in bringing about great longevity.

625 St. Paul Street.

Nonspecific Wassermann Reactions.—Escomel reports in the *Gaceta Médica Peruana* three cases of extensive alveolar pyorrhea in which the Wassermann reaction was strongly positive, notwithstanding the absence of syphilis. Six species of spirilla, the pneumococcus, the streptococcus and two other bacteria were cultivated from the gums. Under local neoarsphenamin treatment, the Wassermann reaction became negative. In other cases the misleading Wassermann reaction had been responsible for intensive arsenical treatment which had entailed intestinal, liver and cutaneous lesions from the toxic action of the arsenic. These were ascribed to the nonexistent syphilis, and were treated with more arsenic. In one case of "Wassermann neurasthenia," under observation, the resentment against the father, as the supposed source of the actually nonexistent syphilis, led to suicide.

A SKIN TEST FOR SUSCEPTIBILITY TO SCARLET FEVER *

GEORGE F. DICK, M.D.
AND
GLADYS HENRY DICK, M.D.
CHICAGO

In 1923, we succeeded in producing experimental scarlet fever with an apparently pure culture of a hemolytic streptococcus isolated from a case of scarlet fever.[1] The Berkefeld V filtrate of this culture did not produce scarlet fever in a person who later developed the disease on inoculation with the unfiltered culture.

In the series of inoculation experiments in which scarlet fever was produced, only two of the ten volunteers acquired the disease. These ten volunteers were young adults who said that they had not had scarlet fever. They were all inoculated with the same culture. The failure of some to acquire scarlet fever, while others developed it in a typical form, was probably due to a difference in susceptibility.

Attempts to demonstrate immunity to scarlet fever by means of skin tests had previously been made. In 1916, we[2] described the reaction occurring in convalescent scarlet fever patients on intracutaneous injection of killed streptococci. These reactions, compared with similar tests in persons who had not had scarlet fever, showed nothing specific.

After experimental scarlet fever had been produced, attempts were made to produce skin reactions with the same culture that had caused the disease. The Berkefeld V filtrate that had failed to produce scarlet fever was used for intracutaneous injections. Injection of this filtrate was followed by inflammatory reactions more frequently in persons who gave no history of scarlet fever than in those convalescing from scarlet fever. After preliminary tests, a dilution of 1:1,000 in sterile salt solution was made, tested for sterility, and kept in a refrigerator. Later, this solution was passed through a Berkefeld W filter without affecting its action; 0.1 c.c. of this 1:1,000 dilution was injected into the skin on the anterior surface of the forearm by means of a small record syringe and a No. 26 needle. The small wheal that resulted disappeared in a few minutes.

TABLE 1.—*Results of Skin Tests*

Kind of Subject	Number Tested	Negative	Slightly Positive	Positive	Strongly Positive
Convalescents from scarlet fever	65	62	3	0	0
Persons with history of scarlet fever	16	15	0	0	1*
Persons with no history of scarlet fever	72	35	7	17	13

* A young man who said that he had scarlet fever as a small child. A letter from his mother stated that when he was a few months old, he had a rash. She did not notice any other symptoms or any desquamation.

In a series of 153 tests, some showed no reaction whatever. Others gave varying degrees of reddening and swelling about the site of the inoculation. The positive reactions usually began to appear from four to six hours after the inoculation. At first, they consisted of a small, circular area of erythema. This red area increased, and reached a maximum size and intensity between eighteen and thirty-six hours after the injection. In the less strongly positive tests, the maximum was reached between eighteen and twenty-four hours. The reddening was frequently associated with some swelling of the skin. In the most strongly positive tests, the reddened area continued to spread, and the swelling increased up to about thirty-six hours after the inoculation. Soon after reaching their maximum size and intensity, the reactions began to subside. Even the most strongly positive did not persist more than forty-eight hours. The bright red color became dull, and began to fade. The swelling disappeared. There was left only a faintly yellowish area. This area sometimes desquamated during the week or ten days following the test.

TABLE 2.—*Effect of Administration of Convalescent Serum on the Skin Test*

Time	Skin Test
Before any serum was given	3.1 cm. by 4.6 cm., bright red, marked swelling
3 days after first 10 c.c. of serum	1.7 cm. by 2.3 cm., bright red, swollen
4 days after second 10 c.c. of serum	1.0 cm. by 1.0 cm., bright red, slightly swollen
2 days after third 10 c.c. of serum	0.4 cm. by 0.8 cm., faint pink, not swollen

The reactions were observed at the end of twenty-four hours, and classified as negative, slightly positive, positive and strongly positive. The reactions designated as negative were those in which the site of injection was indicated only by the point of the needle prick, or by a faint pink streak along the course of the needle in the skin.

Slightly positive reactions consisted of a faint red area less than 2 cm. in diameter; without swelling of the skin, and without tenderness.

Positive reactions were from 1.5 to 3 cm. in diameter and bright red, with some swelling of the skin, and occasionally slight tenderness.

Strongly positive reactions were more than 3 cm. in one or both diameters and intensely red, with marked swelling of the skin, and usually some tenderness. These strongly positive reactions were frequently from 5 to 7 cm. in diameter. The swelling showed a sharply raised edge, and extended beyond the reddened area.

Intracutaneous tests were made in sixty-five convalescents from scarlet fever; sixteen persons with a history of scarlet fever, and seventy-two with no history of scarlet fever. The convalescent scarlet fever patients were from 2 to 35 years of age; thirty were male, and thirty-five female. The tests were made from the seventh to the thirty-third day of the disease.

The persons with a history of scarlet fever were from 3 to 47 years of age. They had had scarlet fever from six months to thirty-seven years before the tests were made; nine were female, and seven were male.

The persons with no history of scarlet fever ranged in age from 12 months to 33 years; thirty-four were male and thirty-eight were female.

The results of the skin tests are shown in Table 1.

That the positive reactions were not caused by foreign protein in the culture medium used is shown by negative results obtained on injection of undiluted fluid

* From the John McCormick Institute for Infectious Diseases.

1. Dick, G. F., and Dick, Gladys H.: Experimental Scarlet Fever, J. A. M. A. 81:1166 (Oct. 6) 1923.

2. Dick, G. F., and Dick, Gladys H.: Immune Reactions in Scarlet Fever, II, J. Infect. Dis. 19:638-646 (Oct.) 1916.

from sterile culture medium in the same persons who gave positive tests with the filtrate.

That the negative results in convalescent scarlet fever were not due to an inability of the skin to react is shown by the fact that a number of patients had positive Schick tests on one arm at the same time that the test with the scarlet fever material was negative on the other arm.

Further evidence of the specific relation of this test to scarlet fever is afforded by the following experiments:

Fresh blood serum from a convalescent scarlet fever patient was mixed with an equal volume of a 1:100 dilution of the filtrate. Another portion of the 1:100 dilution was mixed with an equal volume of salt solution. Both mixtures were incubated thirty minutes. A skin test was then made with 0.1 c.c. of each mixture in a patient who had previously had a positive test with the 1:1,000 dilution. At the end of twenty-four hours, the test done with the salt solution mixture showed a strongly positive reaction, while that done with the convalescent serum mixture was entirely negative. This experiment was repeated five times, using a different convalescent serum and a different subject with a positive skin test each time.

Two nurses who gave no history of scarlet fever—one with a slightly positive test, the other with a positive test—were each given 10 c.c. of convalescent scarlet fever serum. On the second day following the administration of serum, the skin tests were repeated, with negative results.

A third nurse who had no history of scarlet fever showed a strongly positive skin test. She was given 10 c.c. of convalescent serum on three occasions, with the results shown in Table 2.

Since this series of skin tests was made, two of the thirteen who had strongly positive tests have had scarlet fever. In one of these cases, the skin test was still slightly positive on the sixteenth day, and entirely negative on the twenty-eighth day of the disease. In the other case, the skin test had become entirely negative on the eighteenth day of the disease.

SUMMARY

The filtrate of the culture that produced experimental scarlet fever, when used in the proper dilution, gave positive or strongly positive skin tests in 41.6 per cent. of the persons who had no history of scarlet fever.

All of the convalescent scarlet fever patients tested showed negative or only slightly positive reactions.

The action of the filtrate on the skin was inhibited by convalescent scarlet fever serum mixed with the filtrate before it was injected, or given intramuscularly before the test was made.

In two instances in which it was possible to observe the test before and after an attack of scarlet fever, it was positive before the attack, and negative during convalescence.

CONCLUSION

The skin test described bears a specific relation to immunity to scarlet fever.

Cancer in Switzerland.—A. Renaud states that Switzerland has averaged, since 1900, 12.8 cases of cancer per 10,000 inhabitants (12.4 before 1910; 13.3 in 1920). In ten other countries cited, the range is from 5.2 in Spain to 7.4 in the United States and 10.6 in the Netherlands. He says, "The better the facilities for differential diagnosis, the greater the number of cancers discovered." In recent years, the number of visible cancers seems to be stationary or declining (except mammary cancer in Switzerland); the increase is in the number of internal cancers detected. His tabulated statistics were published in the *Revue médicale de la Suisse romande* **43**:433, 1923. In Switzerland, the sexes are almost evenly represented in the cancer incidence.

NONPROTEIN NITROGENOUS CONSTITUENTS OF BLOOD IN ECLAMPSIA AND ALLIED CONDITIONS*

E. D. PLASS, M.D.
DETROIT

During recent years, we have accumulated considerable data on the general question of nitrogen retention in the blood during the late toxemias of pregnancy; and, in view of the divergent opinions that prevail concerning the value of such determinations in the differential diagnosis and prognosis of these conditions, it seems that they should be recorded. Our investigations have led us to believe that blood chemical studies are at present of little or no practical assistance in the clinical management of these cases, and that the older methods of examination—urinalysis, blood pressure readings and ophthalmoscopy—yield the most valuable information concerning the patient's condition.

TABLE 1.—*Normal Values for Healthy Individuals; Whole Blood*

Total nonprotein nitrogen	up to 40 mg. for each 100 c.c.
Urea nitrogen	up to 20 mg. for each 100 c.c.
Uric acid	up to 3 mg. for each 100 c.c.
Urea nitrogen / Total nonprotein nitrogen	up to 50 per cent.

Previous workers (Folin,[1] Caldwell and Lyle,[2] Killian and Sherwin,[3] de Wesselow[4] and others) have demonstrated that the substances studied (total nonprotein nitrogen, urea and uric acid) occur in normal concentrations in the blood during normal gestation. They have, moreover, pointed out that there is a tendency for the nonprotein nitrogen, and especially for the urea, to fall below the level usually present in the nonpregnant state, while the uric acid is not similarly affected, and even tends to rise somewhat during labor. Slemons and Bogert[5] state that whole blood uric acid values as high as 8 mg. per hundred cubic centimeters may normally be present at the end of a prolonged primiparous labor; but their results have not been confirmed, and Caldwell and Lyle[2] conclude that "a definite retention of uric acid in the blood at the end of labor is found only in abnormal cases." The urea

TABLE 2.—*Normal Variations for Plasma Fractions*

Total nonprotein nitrogen	up to 80 mg. for each 100 c.c.
Urea nitrogen	up to 20 mg. for each 100 c.c.
Uric acid	up to 3 mg. for each 100 c.c.
Urea nitrogen / Total nonprotein nitrogen	up to 66 per cent.

* From the obstetric department of the Johns Hopkins Hospital and University, Baltimore.

1. Folin, Otto: Recent Biochemical Investigations on Blood and Urine: Their Bearing on Clinical and Experimental Medicine, J. A. M. A. **69**: 1209 (Oct. 13) 1917.
2. Caldwell, W. E., and Lyle, W. G.: The Blood Chemistry in Normal and Abnormal Pregnancy, Am. J. Obst. & Gynec. **2**: 17 (July) 1921.
3. Killian, J. A., and Sherwin, C. P.: Some Chemical Studies in Normal and Abnormal Pregnancies: Significant Chemical Changes in the Blood in the Toxemias of Pregnancy, Am. J. Obst. & Gynec. **2**: 6 (July) 1921.
4. De Wesselow, O. L. V.: Some Chemical Observations on the Toxemias of Pregnancy, J. Obst. & Gynec. Brit. Emp. **29**: 21-47, 1922.
5. Slemons, J. M., and Bogert, L. J.: The Uric Acid Content of Maternal and Fetal Blood, J. Biol. Chem. **32**: 63 (Oct.) 1917.

nitrogen: nonprotein nitrogen ratio is generally below the usual figure of 50 per cent. and, according to Folin,[1] varies from 20 to 35 per cent. Other writers have generally failed to confirm these extremely low urea figures, although the tendency in that direction is admitted, and occasional very low values (from 4 to 7 mg. per hundred cubic centimeters) are undoubtedly obtained.

In the various toxemic conditions, these constituents are usually, but not invariably, increased somewhat above the normal pregnancy values, but less frequently exceed the commonly accepted standards for nonpregnant individuals given in Table 1.

Therefore, "the retention of nitrogen waste products in the blood of eclampsia and toxemia is very much lower than that found in uremia."[2] This opinion is confirmed by Slemons,[6] de Wesselow,[4] Mackenzie Wallis,[7] Losee,[8] Farr and Williams,[9] Zangemeister,[10] Herter,[11] Folin[1] and von Jaschke,[12] while Killian and Sherwin[3] found "the nonprotein nitrogen markedly increased" in all forms of toxemia, and Williams[13] says that "the uric acid regularly exceeds the normal in the blood of these patients, whereas the other nonprotein nitrogen constituents usually are not increased."

Killian and Sherwin[3] believe "that the high nonprotein nitrogen, of which the urea nitrogen forms a small percentage, is characteristic of pregnancy toxemias of the hepatic type," but that "in the nephritic toxemias . . . there is an increase in nonprotein and urea nitrogen, and more than 50 per cent. of the nonprotein nitrogen is in the form of urea nitrogen." Caldwell and Lyle[2] and de Wesselow,[4] on the other hand, were unable to detect any such pathognomonic variations. Such an idea is quite at variance with the results of Mosenthal and Hiller[14] on nitrogen retention in nonpregnant individuals with chronic nephritis, in that they found the urea nitrogen: nonprotein nitrogen ratio to be dependent largely on the concentration of the latter substance. When the nonprotein nitrogen in the blood rises, the increase is mainly attributed to urea, and the percentage of this waste product must become greater. If the work of Killian and Sherwin should be confirmed, it would point definitely to a retention of some, at present unrecognized, nitrogenous material in the blood of eclamptic patients, and would offer a fertile field for further study.

Practically all work previously done has been on oxalated or citrated whole blood, whereas we have used serum or plasma almost exclusively, since we feel that the fluid part of the blood is most actively concerned with the problems of retention and elimination, and that the corpuscles behave largely as reservoirs into which, or from which, the various crystalloids are constantly passing in a continued effort to maintain an equilibrium.[15] This necessitates a comparison between whole blood and plasma values in order that our figures may be interpreted in terms of whole blood. Urea and uric acid tend to be in equal concentrations in the plasma and corpuscles so that plasma values are practically identical with whole blood values. On the other hand, the corpuscles contain an excess of other nonprotein nitrogenous substances, so that the whole blood regularly contains more total nonprotein nitrogen than does the plasma. Normally, this difference amounts to about 10 mg. per hundred cubic centimeters. The normal variations for the plasma fractions are given in Table 2.

It is assumed, on the statement of Folin,[16] that the serum and plasma contain practically identical amounts of the substances studied.

TABLE 3.—*Normal Pregnancy*

Case Number	Age	Previous Pregnancies: Term	Previous Pregnancies: Misc.	Period of Pregnancy	Material Used	Analytic Results: Total N.P.N., Mg. per 100 C.c.	Analytic Results: Urea N, Mg. per 100 C.c.	Analytic Results: U.N. / N.P.N., per Cent.	Analytic Results: Uric Acid, Mg. per 100 C.c.	Symptoms: Albuminuria, Gm. per Liter	Symptoms: Systolic Blood Pressure, Mm.	Symptoms: Edema	Comment
1	22	1	0	10th mo.	Plasma	17	11	62	2.8	0	125	0	Edema of feet during 9th month; none now
				In labor	Plasma	15	9	61	2.6	0	125	0	1 hour 15 minutes before delivery
2	28	2	0	9th mo.	Plasma	17	12	71	1.8	0	...	0	Delivered 1 hour later by radical cesarean section; contracted pelvis; third section
				9th mo.	Whole blood	23	11	48	1.5	0	...	0	
3	17	0	0	In labor	Plasma	26	17	65	3.9	0	150	Slight	During second stage
4	18	0	0	Post-partum	Plasma	18	8	44	4.7	..	...	Very slight	25 minutes after spontaneous delivery
5	24	1	0	Post-partum	Plasma	20	11	56	2.4	0	120	0	2 hours after spontaneous delivery; well compensated mitral insufficiency
6	19	0	0	Post-partum	Plasma	22	9	39	5.2	..	...	0	2 hours after spontaneous labor, induced by bougie for prolonged pregnancy
7	15	0	0	In labor	Plasma	14	5	36	2.1	0	...	0	Onset of labor 15 hours before delivery
8	21	0	0	In labor	Plasma	17	9	53	1.4	0	115	0	30 minutes before delivery
9	20	0	0	Post-partum	Plasma	23	11	48	1.2	0	...	0	6 days after spontaneous delivery
10	18	0	0	In labor	Plasma	16	7	44	1.4	+	120	0	15 hours before delivery
11	23	0	0	In labor	Plasma	19	10	53	2.8	0	...	0	6 hours before delivery
12	16	0	0	Post-partum	Plasma	20	11	56	3.9	0	110	0	5 minutes after delivery
13	17	0	0	In labor	Plasma	24	14	59	4.1	0	120	0	8 hours before delivery

EXPERIMENTAL

The blood samples were obtained by venipuncture at the time of admission or when the symptoms were

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most marked, but without reference to meals. Powdered potassium oxalate was employed to prevent clotting whenever plasma was to be analyzed; otherwise the clear serum was obtained by centrifugalization of the whole blood after a firm clot had been formed. As a rule, the determinations were begun immediately; but, when delay was unavoidable, the samples were preserved in the ice chest. During the work on serum, the nonprotein nitrogen was determined after precipitation of the proteins with ethyl alcohol (95 per cent.) and alcoholic zinc chlorid, while the urea was estimated by the Van Slyke urease method. The more recent plasma analyses were done according to the Folin-Wu technic. Duplicate determinations were always made in the puerperium, were all within the normal range, except that in five samples the uric acid exceeded 3 mg. per hundred cubic centimeters. The latter were obtained during labor or immediately after delivery, and tend to confirm the findings of Slemons and Bogart [5] that, even in normal individuals, the strain of parturition may serve to elevate the uric acid slightly. None of the total nonprotein nitrogen values were above 30 mg., and the urea nitrogen was consistently below 20 mg. per hundred cubic centimeters, although less than half were in the range given by Folin as normal for pregnancy (5 to 9 mg. per hundred cubic centimeters). The urea percentages were, with one exception, below the level set for the high normal point.

TABLE 4.—*Pregnancy Toxemias without Convulsions*

						Analytic Results				Symptoms					
Case Number	Age	Previous Pregnancies: Term	Previous Pregnancies: Mise.	Period of Pregnancy	Material Used	Total N.P.N., Mg. per 100 C.c.	Urea N, Mg. per 100 C.c.	U.N. / N.P.N., per Cent.	Uric Acid, Mg. per 100 C.c.	Albuminuria, Gm. per Liter	Systolic Blood Pressure, Mm.	Edema	Retinitis	Chronic Nephritis	Comment
14	38	0	0	8th mo.	Serum	57	..	..	...	14.0	210	Marked	+	Yes	Delivered next day; spontaneous
15	31	5	0	2d mo.	Serum	35	19	54	...	0.25	135	Slight	?	Yes	Admitted for observation; toxemia in previous pregnancy
16	27	3	0	9th mo.	Serum	36	28	79	...	11.0	190	Marked	0	Yes	Labor induced next day
17	25	0	0	7th mo.	Serum	35	26	74	...	26.0	200	Marked	+	Yes	Labor induced 10 days later
18	36	5	1	8th mo.	Serum	72	53	74	...	10.0	220	Slight	+	Yes	Delivered next day
19	28	0	1	9th mo.	Serum	28	18	64	...	2.0	190	Marked	+	Yes	Spontaneous delivery 1 month later; died 8 days postpartum; embolism
20	23	1	0	9th mo.	Serum	24	15	63	...	7.0	170	Marked	0	No	Labor induced 1 week later
21	40	6	0	8th mo.	Serum	34	28	82	...	7.5	190	None	+	Yes	Delivery 3 weeks later; spontaneous
22	22	0	0	10th mo.	Plasma	23	15	65	4.8	+	175	Marked	0	?	Delivered spontaneously 3 days later
23	28	1	0	4th mo.	Plasma	14	8	57	2.0	+	140	None	0	Yes	Toxemia in previous pregnancy; admitted for observation
24	35	0	0	7th mo.	Plasma	19	14	74	3.7	6.0	210	Marked	+	Yes	Delivered same day by cesarean section; sterilized
25	27	0	0	8th mo.	Plasma	18	10	56	1.5	0.75	110	Slight	?	No	Delivered 6 weeks later; no symptoms
26	20	0	0	In labor	Plasma	23	15	66	5.0	0	180	Marked	?	No	Delivered same day; low forceps
27	18	0	0	10th mo.	Plasma	17	11	64	3.1	+	195	Marked	0	No	Labor induced 3 days later
28	21	0	0	8th mo.	Plasma	18	9	50	3.6	1.0	170	Moderate	0	No	Delivered 6 weeks later; no symptoms
29	18	0	0	10th mo.	Plasma	14	9	61	2.9	2.0	145	Marked	?	No	Delivered 2 days later; low forceps
30	16	0	0	10th mo.	Plasma	18	13	74	4.5	6.5	145	Moderate	0	No	Delivered by cesarean section; prompt recovery
31	29	3	1	6th mo.	Plasma	19	11	57	2.0	3.0	210	Slight	0	Yes	Delivered 8 days later; labor induced; bougie
32	32	6	1	5th mo.	Plasma Whole blood	30 37	25 17	83 47	2.8 2.6	5.0	245	Slight	0	Yes	Twins; uterus emptied by abdominal hysterotomy followed by tubal sterilization
33	33	9	0	3d mo.	Plasma Whole blood	21 25	12 11	57 44	2.3 2.1	+	225	Slight	0	Yes	Sterilized by supravaginal hysterectomy
34	19	0	0	9th mo.	Plasma	26	14	53	5.2	1.25	205	Marked	0	Yes	Induced spontaneous labor
35	38	...	...	9th mo.	Plasma	32	20	62	6.8	+	255	Slight	+	Yes	Labor induced 2 weeks later
36	16	0	0	10th mo.	Plasma	19	8	42	2.6	3.0	160	Marked	0	Probably yes	Delivered by cesarean section after 6 days conservative therapy
37	36	10	0	10th mo.	Plasma Whole blood	30 38	17 15	57 40	5.8 4.7	1.5	185	Marked	+	Yes	Delivered 2 days later; spontaneous
38	37	0	4	6th mo.	Plasma Whole blood	22 34	13 12	58 35	2.4 2.2	0	265	0	0	Probably yes	Died 2 months later; premature separation of placenta

and reasonable checks were demanded, while every precaution was taken to insure accuracy.

Our results are recorded in Tables 3, 4 and 5, in connection with certain relevant clinical data. No attempt has been made to separate the so-called "hepatic" from the "renal" toxemias, since our experience has been that such a differentiation is far more arbitrary than exact, and that the majority of cases do not represent a pure type. Generally speaking, primiparas are much more likely to develop the former, whereas it is an unusual occurrence in multiparous women unless they have twins or hydramnios.

RESULTS

Normal (Table 3).—The thirteen specimens obtained in the latter part of pregnancy, during labor and early

Toxemia Without Convulsions (Table 4).—Twenty-six specimens of serum or plasma were examined, and four determinations of the corresponding whole blood are introduced to facilitate comparison. In only eight instances was the total nonprotein nitrogen above 30 mg. per hundred cubic centimeters, and in each of these cases it would seem from the physical findings that there must have been a true nephritic process. On the other hand, several undoubted patients with nephritis presented values within the normal range. The urea was high only in the cases which showed a high nonprotein nitrogen, and the urea nitrogen percentage followed practically the same distribution. Only twice was the proportion below 50 per cent., and the lowest ratio noted (32 per cent.) was found in a case of undoubted chronic nephritis. An increase in the

uric acid above 3 mg. per hundred cubic centimeters was more frequently detected (in nine cases out of seventeen), a fact completely in accord with the observations of Myers, Fine and Lough[17] that, in acute disturbances of urinary excretion, the uric acid tends to accumulate in the blood in advance of the other constituents.

Toxemia With Convulsions (Table 5).—In all, twenty-four specimens were examined and no characteristic variations were found, the changes being practically the same in extent as those discovered in the toxemias without convulsions, except that the uric acid values tended to reach higher levels in certain cases. have a distinct tendency to fall in the lower range of normal. This is particularly true of the urea, in which exceptionally low concentrations are occasionally manifest, while the opposite tendency is sometimes apparent in the uric acid values at the end of labor.

There are no characteristic changes in the concentrations of these substances during the toxemias of pregnancy, whether they are associated with convulsions or not. In many instances the serum or plasma findings are quite normal, while in other cases there is a moderate increase, which is more likely to affect the uric acid values, so that a moderate rise in the concentration of this nitrogenous end-product

TABLE 5.—*Pregnancy Toxemias with Convulsions*

						Analytic Results				Symptoms					
		Previous Pregnancies													
Case Number	Age	Term	Misc.	Period of Pregnancy	Material Used	Total N.P.N., Mg. per 100 C.c.	Urea N, Mg. per 100 C.c.	U.N. / N.P.N., per Cent.	Uric Acid, Mg. per 100 C.c.	Albuminuria, Gm. per Liter	Systolic Blood Pressure, Mm.	Edema	Retinitis	Chronic Nephritis	Number of Convulsions	Comment
39	18	0	0	9th mo.	Serum	41	17	42	...	19.0	195	Marked	?	No	9	Delivered by cesarean section; died 4 weeks later from ruptured vessel in duodenal ulcer
40	21	0	0	Post-partum	Serum	34	24	70	...	7.0	165	None	0	No	3	First convulsion 2 hours after delivery
41	18	0	0	Post-partum	Serum	42	27	64	1.8	+	190	Slight	?	No	3	First convulsion 10 minutes after delivery
42	19	0	0	10th mo.	Serum	25	19	76	...	8.0	150	None	?	No	7	Delivered 3 days later
43	43	6	2	In labor	Serum	36	25	70	...	12.0	210	Slight	+	Yes	7	Induced spontaneous labor
44	18	0	0	In labor	Serum	43	28	65	...	22.5	205	Marked	0	Probably yes	6	Delivered few hours later; low forceps
45	27	2	0	In labor	Serum	31	26	84	...	5.0	180	Slight	0	?	14	Delivered spontaneously a few hours later
46	35	6	1	Post-partum	Serum	25	21	84	...	3.0	130	Moderate	0	Probably no	4	First convulsion 7½ hours after delivery
47	32	4	1	Post-partum	Serum	41	35	85	...	1.5	155	Moderate	0	Yes	12	First convulsion 7 hours after delivery
48	16	0	0	In labor	Serum	26	9	35	...	10.0	200	Slight	0	No	10	Delivered a few hours later by high forceps
49	16	0	0	10th mo.	Serum	27	23	85	...	2.0	125	Slight	0	No	24	Delivered by cesarean section
50	28	0	0	10th mo.	Serum	25	11	44	...	12.0	175	Moderate	0	No	6	Delivered by cesarean section; no convulsions after delivery
51	34	2	2	9th mo.	Plasma	24	18	75	...	16.0	200	Moderate	0	0	6	Labor induced 1 week later
52	16	0	0	10th mo.	Plasma	22	15	68	3.6	2.5	175	None	?	No	11	Delivered by cesarean section; no convulsions after delivery
53	17	0	0	10th mo.	Plasma	22	12	50	5.0	1.0	170	Marked	0	No	11	Delivery 1 day later, spontaneously
54	22	0	0	Post-partum	Plasma	52	41	78	8.8	0	180	Marked	?	No	16	First convulsion 5 hours after delivery; died 4 weeks post-partum; bronchopneumonia
55	21	0	0	10th mo.	Plasma	13	6	45	2.9	0.2	180	Marked	?	No	2	Delivered 2 days later, spontaneously
56	38	0	0	In labor	Plasma	41	24	58	10.7	9.0	185	Marked	+	Yes	3	Delivered spontaneously next day
57	26	2	0	10th mo.	Plasma	20	13	65	2.0	2.0	210	Moderate	0	Yes	4	Delivered spontaneously 2 days later
58	27	5	0	10th mo.	Plasma	24	9	36	7.6	2.0	190	Marked	0	Yes	6	Twins; induced by bag; delivered same day
59	30	0	1	10th mo.	Plasma Whole blood	32 46	18 18	57 39	5.4 4.0	9.0	185	Marked	0	No	3	Delivered next day; version and extraction
60	29	0	0	10th mo.	Plasma Whole blood	34 39	20 16	60 41	7.9 8.5	4.5	170	Marked	0	No	?	One convulsion in hospital ? before admission
61	17	0	0	10th mo.	Plasma Whole blood	28 37	14 12	50 32	10.9 8.3	1.5	105	Moderate	0	No	8	Delivered next day; spontaneously
62	19	0	0	Post-partum	Plasma	34	15	44	11.1	2.0	210	None	0	No	10	First convulsion 1 hour after delivery, 4 after admission

In ten instances the total nonprotein nitrogen was elevated, and the urea nitrogen tended to be high. The proportion of low urea nitrogen percentages was practically the same as in the previous group, and there was no particular evidence that the urea ratio was low in the patients who might be expected to have a true "hepatic" toxemia. The few whole blood values which have been introduced show the expected differences from plasma.

SUMMARY

The values for nonprotein nitrogen, urea and uric acid in the blood plasma of normal pregnant women is quite common, but not invariable. Examination of the findings in cases of undoubted clinical nephritis fails to show any particular variation which may be regarded as pathognomonic of the condition. It seems, therefore, that chemical examination of the blood for these constituents is quite useless as an index of the severity of the pathologic changes in eclampsia and its associated toxemias.

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Climate in Tuberculosis.—Maybe, there is no climate for tuberculosis, but there are many climates each of which acts favorable on some individuals and not so favorably, or unfavorably, on others; and as it acts on the individual, so it will be reflected on the individual's tuberculosis.—A. K. Krause: *J. Outdoor Life* **20**:441 (Dec.) 1923.

DIAGNOSIS AND TREATMENT OF DISEASES OF THE SEMINAL VESICLES *

WILLIAM ROBERT DELZELL, M.D.
AND
OSWALD SWINNEY LOWSLEY, M.D.
NEW YORK

One of the first surgical aims in treating pus infections of the body is to secure good drainage. At times it is not practical to apply this principle, and excision of the infected part is necessary. Further help is often obtained by the use of antiseptics in combating the invading organism, although it is most important to establish good drainage before help from antiseptics can be anticipated.

These general principles apply to infected seminal vesicles. It is our purpose in presenting this paper to emphasize the fact that drainage of the seminal vesicles may be acelerated by dilation of the ejaculatory ducts through the urethra. Belfield [1] and his followers have described the occurrence of stricture of the ejaculatory ducts as seen by roentgenograms taken of the seminal vesicles and ducts injected through the vas deferens; the condition has also been seen at necropsy. The ducts at times are also blocked by detritus and mucous plugs.[2] In both of these conditions, in order to secure drainage of the infected vesicles, dilation of the ducts is recommended. The relief given many patients with seminal vesiculitis by the Belfield operation has been obtained in a few cases by injecting the vesicles with antiseptics through the ejaculatory ducts, the orifices of which [3] may be found easily, even when not visible.

TECHNIC OF THE AUTHORS

The patient is prepared in the same manner as he is for any urethral instrumentation. The urethra is anesthetized with a local anesthetic, and the meatus examined. If the meatus is found to be too small to admit a French 28 endoscope, a meatotomy is performed. A posterior tube endoscope is then introduced, the verumontanum examined, and the ejaculatory ducts are sought. The positions of the orifices vary, but are usually found to be high up on the lateral walls of the verumontanum, slightly outward from the opening of the utricle. When the ducts are seen, there is but little skill required to catheterize them with a specially devised metal catheter.

At times, the ducts are not visible when the colliculus is swollen and granular, and in these cases it is necessary to probe gently in the proximity of the opening until the passage of the instrument is accomplished. Occasionally one must cauterize a swollen verumontanum with a chemical agent, preferably phenol (carbolic acid), 50 per cent. in glycerin, and wait until a later date before the ducts can be catheterized. For seminal vesiculography, a 20 per cent. solution of sodium iodid is injected into the ejaculatory ducts until the patient notices a sensation of fulness in the region of the rectum.

A brief description of the instrument used to catheterize the ducts will be of help to those desiring to carry out the procedure. All of the available instruments were used for injections, but each one had several handicaps. One of us (W. R. D.) therefore devised two new instruments for this purpose. One instrument used in our work is a nickeled steel tube 23 cm. in length; the caliber is F. 6, except that the catheterizing end is F. 4 for the last 1.5 centimeters. This end is olivary in shape. A firm handle is placed on one side, and the receptacle for receiving the fluid is placed on the other side, at right angles to the main shaft so that vision is not interfered with during the injection. The other instrument is an ordinary 4 F. catheter, open only on the end.

EMBRYOLOGY AND ANATOMY

Lowsley [4] describes the seminal vesicles as originating in the thirteenth week of fetal life:

> They appear first as an evagination, lateralward from each vas deferens, being covered by the same tissue that envelopes the latter structure. They grow backward and laterally consisting of a main part which is convoluted and from which rather numerous convoluted branches grow out, as described by Gustaf Pallin.[5]

Watson [6] found the vesicles well balanced paired organs, having many diverticula in the middle and distal thirds. These evaginations arise not only from the main channel but also from other evaginations like a tree. At birth, the peritoneum reaches just below the tip of each vesicle.

Dillon and Blaisdell [7] state that the vesicles, vasa and ampullae are similar in structure, each having a mucosa supporting several layers of columnar epithelium and externally two layers of muscle, an inner circular, and an outer longitudinal. Outside, a fibrous adventitia carries vessels, lymphatics and nerves.

The vesicles lie in a three layered fascial hammock, as described by one of us,[8] who called this the intervesicular fascia. They are located under the base of the bladder, sometimes touching it, and in front of the rectum. They lie laterally to the spermatic cords, and their lower extremities converge toward the base of the prostate, terminating in the ejaculatory ducts, which open into the urethra on the verumontanum.

ETIOLOGY

Chronic pelvic congestion, previous infections of the vesicles and anatomic anomalies are predisposing factors to seminal vesiculitis, which may be bacterial or nonbacterial in origin. Those of nonbacterial origin are caused usually from improper sexual habits. Kretschmer [9] has compiled several cases of calicification of the seminal vesicles caused from senility, and cites Braasch, who has found calcification in roentgenograms, and Pfahler and Skinner, who have also seen a few cases. One of our noninfective cases followed the use of the high frequency current in the bladder, causing an acute inflammation of the left vesicle. The infective type gave a history of gonorrhea in more than 90 per cent. of the cases. In thirty-

* From the Department of Urology, James Buchanan Brady Foundation of the New York Hospital.

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two of a series of 200 cases there had been gonorrheal infection more than ten years previously. In cultures of thirty-eight specimens obtained through a sterile endoscopic tube, the following bacteria were found: *Staphylococcus viridans,* 2; *hemolyticus,* 2; *aureus,* 9; *albus,* 10; total, 23; *Streptococcus viridans,* 10; *hemolyticus,* 3; total, 13; *B. coli-communis,* 4; *M. tetragenus,* 2; *B. pyocyaneus,* 2; *B. proteus,* 1; *diphtheroid bacillus,* 1.

White and Gradwohl [10] found gonococci in 80 per cent. of their cases. These were in pure culture in 60 per cent. of the cases. Their findings were similar to those reported by Hyman and Saunders,[11] Herbst [12] and Zigler,[13] except that gonococci, *M. catarrhalis* and the pseudodiphtheria organism occurred in a higher percentage of the cases. The other bacteria reported by these writers are pneumococcus, streptococcus, staphylococcus and *B. coli.* The tubercle bacillus causes a distinct type of seminal vesiculitis.

PATHOLOGY

One of the most striking features in reviewing the pathologic reports of excised vesicles is that the pathology is not commensurate with the relief of symptoms in such cases. In one of our most severe cases relieved by operation, in which the patient had had rheumatism for three years, and also exostosis of the heels, culture from the vesicles was sterile. The walls of the vesicles were characterized by a number of minute collections of lymphocytes. In another patient, who had had perineal pains for two years, and was relieved by the operation, there was no obvious inflammatory reaction of the wall of the seminal vesicle, but a marked obliterating endarteritis of the larger blood vessels was present.

Cunningham [14] says that he has heard of no convincing explanations of the almost miraculous subsidence of the symptoms following the removal of foci, which as far as we can determine are free from organisms. The pathology of the seminal vesicles is

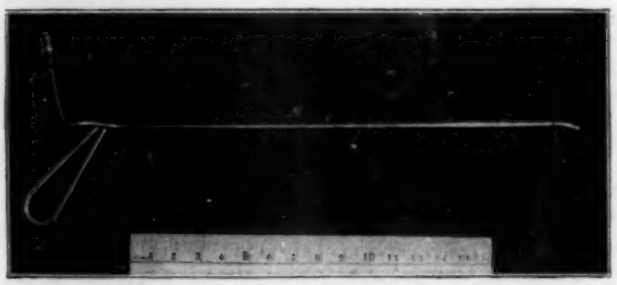

Fig. 1.—Delzell's olivary tip ejaculatory duct catheter.

similar to that of other structures having a cavity lined with mucous membrane. The acute stage begins with engorgement of the vessels and may go on to abscess formation. The subacute stage is marked by the round cell infiltration in the wall, and the chronic stage shows increase of hyaline and connective tissue stroma, which may greatly thicken the wall and diminish the lumen. A periseminal vesiculitis is always associated with the condition, and this is marked by the laying down of adhesions to surrounding structures.

Dillon and Blaisdell [7] have classified the surgical pathology into four groups, depending on the microscopic evidence of intrinsic and extrinsic changes. Microscopically, their mildest cases showed more or less thickening of mucous folds, due to round cell infiltration and granulation tissue, with some denuding of the mucosa. Later, the folds become more fibrous in character, and form recesses between them containing inflammatory exudates, secretion, necrotic cells and micro-organisms. In places, the lumen becomes narrowed. In more advanced cases, the granulation is increased, and more lobules are obliterated, which are replaced with fibrous tissue. The fibrous sheath is thicker and leukocytic, and round cell infiltration is more obvious in the perivesical tissue. Later there is a destruction of glandular tissue, with fibrous tissue more advanced.

Fig. 2.—Specimen showing immensely enlarged seminal vesicles: *P,* prostate gland; *V D,* vasa deferentia; *S V,* seminal vesicles.

Lowsley [15] states that on account of the intimate anatomic association of the prostate and the seminal vesicles, it is necessary to consider them together in discussing arthritis.

Cunningham,[14] writing recently on the seminal vesicles, says that in his study of cases, the grades of inflammation have varied both in the seminal vesicle and the prostatic tissue from the active acute to the chronic types, and that the same grade of inflammation may exist in these organs, or again that the prostatic tissue may be little or not at all involved and the seminal vesicle tissue from the same patient show different stages of inflammation, and the opposite may be the case. In some cases, one vesicle has been infected and the other normal, but this is the exception.

Barney [16] found the inflammation present microscopically in both vesicles, and says that if one vesicle demands excision, its fellow also should be excised. He found the ampulla of the vas in similar condition to that of the seminal vesicle. He found no neoplasms of the vesicle, but cites Ceelen [17] as reporting a case of fibromyoma; Teubert as reporting four cases of cancer, and Zahn, one case of primary sarcoma of the vesicle.

Voelcker [18] reported one case of myoma of the seminal vesicle capsule that was benign, and cites Fenwick, Guelliot, Walter and Courvoisier, as each reporting one case of primary carcinoma of the seminal vesicle; he also states that Luscksch reported one case of myoma found at necropsy.

We have a case of Dr. Harold Johnson's in the New York Hospital in which there is a tumor of the right seminal vesicle as large as a lime. The right side of this patient's bladder is covered with bullous edema. A biopsy of this case showed it to be carcinoma; necropsy proved it to be primary in the seminal vesicle.

10. White, E., and Gradwohl, S.: Seminal Vesiculitis Symptoms in Different Diagnosis and Treatment and Bacterial Studies in One Thousand Cases, J. Urol. **6**: 303, 1921.
11. Hyman, A., and Saunders, A. S.: Chronic Seminal Vesiculitis, New York M. J. **97**: 652 (March 29) 1913.
12. Herbst, R. H.: The Surgical Treatment of Chronic Seminal Vesiculitis by Vasotomy (Belfield Operation), J. A. M. A. **59**: 2242 (Dec. 21) 1912.
13. Zigler, M.: Seminal Vesiculitis, New York M. J., May 4, 1921.
14. Cunningham, J. D.: Operative Treatment of Seminal Vesiculitis, J. Urol. **3**: 175-194, 1919.
15. Lowsley, O. S.: The Rôle of the Prostate and Seminal Vesicles in Arthritis, New York M. J. **113**: 641 (May 4) 1921.
16. Barney, J. D.: Recent Studies in the Pathology of the Seminal Vesicles, Boston M. & S. J. **171**: 59-62, 1914.
17. Ceelen: Virchows Arch. f. path. Anat., 1912, p. 207.
18. Voelcker, F.: Chirurgie der Samenblusen, Neue deutsch. Chir. **2**.

Spitzer [19] has emphasized the importance of perivesiculitis. He cites Rudolph Pickers' classification of seminal vesicles depending on anatomic shape and presence or absence of diverticula. Seward [20] says that when, at examination, the vesicle is not palpable, he does not believe that this indicates noninvolvement. McKenna [2] has described the blocking of the seminal vesicles by mucopurulent plugs, and states that a chronic vesicle may be so distended as greatly to resemble an acute seminal vesiculitis.

DIAGNOSIS

The diagnosis of seminal vesiculitis is based on the history, and physical and laboratory findings. One author [21] states that a history of urethritis, or stricture with discomfort in the perineum increased on defecation, tenesmus, frequent erections without sexual

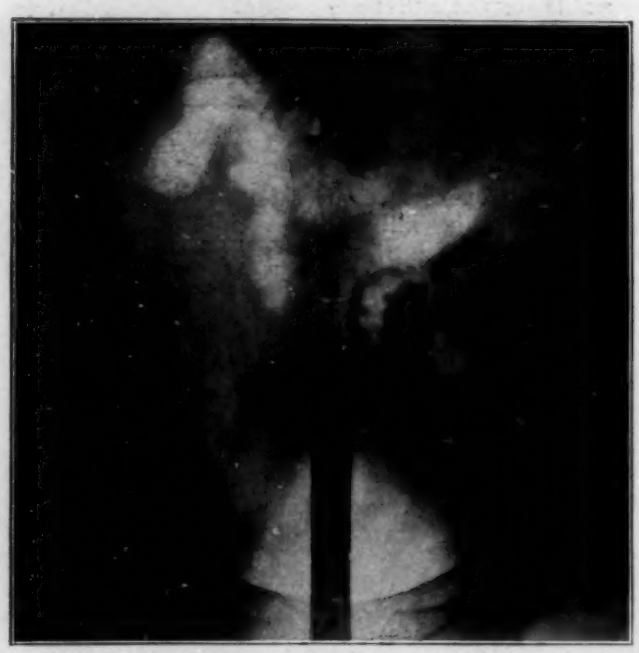

Fig. 3.—Elongated left seminal vesicle and vas deferens.

stimulus and frequent nocturnal emissions, and the presence, often, of blood and pus in the semen, are the most typical signs and symptoms observed. In our series of private cases, the symptoms most commonly complained of were watery urethral discharge, recurrent epididymitis, pain about the rectum and perineum, impotentia, sexual weakness with premature ejaculation, backaches, arthritis, dysuria and mental depression. Some patients suffer from iritis. Several had irritation at the end of the penis. Most of the patients had had gonorrhea.

In these cases, as in all medical and surgical cases, there should at once be a complete physical examination. Other foci of infection, such as teeth, tonsils and sinus infections, should be noted in particular and promptly eradicated. The external genitalia should be carefully examined, particularly the meatus for irritation and discharge, and the condition of the epididymides and vasa deferentia noted. The latter, being closely associated with the seminal vesicles, may at once draw the attention of the examiner to diseased seminal vesicles. Zigler [13] called attention to the importance of proper methods of palpation, emphasizing the necessity of keeping the palpating finger in full extension. He was able to palpate the seminal vesicles in 95 per cent. of his cases. If one remembers the lateral position of these organs, many will be palpated that might be easily overlooked. One may note whether the vesicles are swollen and boggy, small, thickened, nodular, or calcified, and whether they empty on stripping. The fluid obtained should be examined for pus, red blood cells, bacteria and the condition of the spermatazoa, and a specimen should be cultivated for bacterial differentiation and autogenous vaccine preparation. We prefer gathering the specimen through a sterile endoscopic tube, and believe that this method more nearly avoids contamination from the anterior urethra with its extensive flora of bacteria than other methods used.

The endoscopic changes in seminal vesiculitis, as described by Hyman and Saunders,[11] are seen mainly on the colliculus, although these are not pathognomonic. The colliculus may be normal in size and color, but be granular, or it may be very small and pearly white or of the enlarged, congested type. They conclude that the only pathognomonic sign of vesiculitis is pus exuding from the orifices of the ducts. Cystoscopically, one may see slight intrusion from swollen vesicles and congestion over these areas.

Roentgen-ray studies of the seminal vesicles as done by Belfield,[22] Millstone,[23] Thomas and Pancoast,[24] Young and Waters,[3] and ourselves, often give helpful information regarding the vesicles and the ducts. One of our illustrations shows an abscess of the seminal vesicle that was verified at operation.

TREATMENT

The treatment of seminal vesiculitis naturally divides itself into two classes, surgical and nonsurgical. The nonsurgical treatment is so generally known that it seems unnecessary to do more than call attention to the methods most commonly employed. The patient is advised to avoid alcohol in all forms, red meats, spices and other irritating foods. Advice concerning personal and sex hygiene is always given, and accelerates palliative relief. The importance of regular bowel movements should not be overlooked, as constipation may cause an undesirable congestion of all pelvic organs. In many cases, hot rectal douches and hot sitz baths are very helpful. Farman,[25] in a recent article, has called attention to the proper application of prostatic and seminal vesicle massage. Vigorous massage, but not forceful enough to cause bleeding, given twice or three times a week, is one of the most beneficial procedures. Wolbarst's [26] caution of forming the massage habit is important, although there is less chance of this if the massage is given vigorously.

The silver salts, acriflavine, mercurochrome and potassium permanganate have been used as instillations or bladder irrigations. Each drug has its advocates, but none has been accepted generally to the exclusion of the others. We believe it is well to use different drugs

19. Spitzer, W. M.: Infections of the Seminal Vesicles, Colorado Med. **13**: 376 (Dec.) 1916.
20. Seward, I. E.: Seminal Vesiculitis, Ohio State M. J. **14**: 275 (May) 1918.
21. Squier, J. B.: Indications for Operation on the Seminal Vesicles, Boston M. & S. J., June 11, 1914.
22. Belfield, W. T.: Skiagraphy of the Seminal Ducts, J. A. M. A. **60**: 800 (March 15) 1913.
23. Millstone, H. J.: Seminal Vesiculography, Wisconsin M. J. **17**: 146 (Sept.) 1918.
24. Thomas, B. A., and Pancoast, H. K.: Observations on the Pathology, Diagnosis and Treatment of Seminal Vesiculitis, Ann. Surg., September, 1914.
25. Farman, G. F.: Prostatic Massage: A Practical and Theoretical Discussion, J. A. M. A. **79**: 1328 (Oct. 14) 1922.
26. Wolbarst, A. L.: Chronic Seminal Vesiculitis: Its Diagnosis and Surgical Treatment, Am. Med. **28**: 593, 1921.

from time to time to prevent the bacteria from becoming resistant to any one. Dilations of the posterior urethra by sounds or dilators tend to open the ducts, break down bullous formations and, by improving the condition of the posterior urethra, give better drainage to the seminal vesicles and prostate. Topical applications or high frequency treatment in the posterior urethra are used for a similar purpose. Belfield [1] has pointed out a method of treating seminal vesicles by vas puncture and injecting antiseptics. Herbst [12] states that the Belfield operation gives a fairly high percentage of cures in a class of cases which must be either relegated to the incurable heap or be subjected to more serious surgical procedure. Lespinasse [27] recommends the injection of the vesicles by the Belfield [1] method, using specific bactericidal serum. He finds collargol, 10 per cent., efficient, but acriflavine (1:1,000) too irritating. Ockerblad [28] believes that 2 per cent. mercurochrome solution is superior to other antiseptics for the Belfield procedure. Thomas and Pancoast [24] conclude that the particular treatment should depend on the condition; that experienced massage suffices in the majority of cases, and that convalescence may be accelerated by vas puncture and direct medication of the vesicles, but that certain cases are surgical.

In our cases of chronic seminal vesiculitis we have injected 10 per cent. argyrol through the ejaculatory ducts, with most encouraging results. Since it is possible to inject a rather high percentage of seminal vesicles, it seems logical to expect as great relief as that given by Belfield's operation without subjecting the patient to operation. Cases treated in this way have the benefit of the antiseptic plus improved drainage due to the dilatation of the ejaculatory ducts.

Fig. 4.—Right seminal vesicle, showing diverticulum and vas deferens.

SURGERY OF SEMINAL VESICLES

Fuller [29] first popularized operative procedures on diseased seminal vesicles. He found the operation of seminal vesiculotomy applicable in cases of acute and chronic gonorrheal rheumatism, and found that all of his patients were relieved in a most radical manner. He also found that patients with urinary disturbances due to infection of the vesicles received relief following seminal vesiculotomy. Also, certain patients with perineal pain, sexual disturbance and nervous mental cases due to diseased vesicles were relieved following this operation. Cunningham [14] has reported many cures in cases of rheumatism, and a subsidence of discharge following seminal vesiculotomy. He states that the selection of cases for seminal vesiculotomy should include those in which there are local or general manifestations dependent on acute and chronic focal infections in these organs which cannot be overcome by the usual nonoperative methods of treatment.

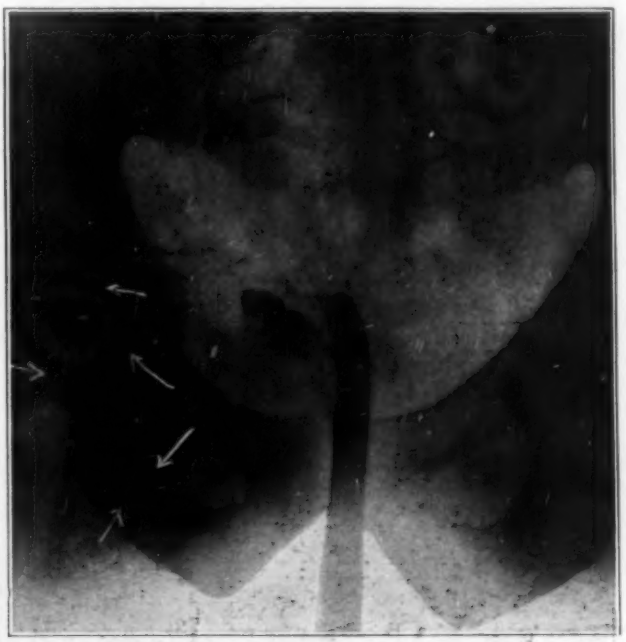

Fig. 5.—Right seminal vesicle, showing patent vas deferens to scrotum.

The late Frederick W. Smith and J. H. Morrissey have excised the seminal vesicles in 152 mental and other cases. Their results and an improved technic will soon be published.

The number of seminal vesicles operated on in any hospital seems to vary according to the enthusiasm of its staff for this particular operation.

One of us,[15] in reviewing the treatment of 100 cases of gonorrheal arthritis at Bellevue Hospital, found that better results were obtained by operation and the cast methods than by any other, but that local applications to the joints proved beneficial in three fifths of the cases; that gonococcus vaccine was beneficial in seven of eleven cases, and that palliative treatment of the prostate and seminal vesicles resulted in two cures. At the New York Hospital it has been deemed necessary to operate on diseased vesicles in only nine cases in the last two

27. Lespinasse, V. D.: Local Treatment of Seminal Vesicles: New Methods, J. Urol., June, 1920.
28. Ockerblad, N. F.: Sterilizing Seminal Vesicles with Mercurochrome, J. Missouri M. A. **17**: 421 (Oct.) 1920.
29. Fuller, Eugene: Seminal Vesiculotomy: Its Purpose and Accomplishments, J. A. M. A. **59**: 1959 (Nov. 30) 1912.

years. This number is exceedingly small, in view of the fact that from forty to fifty gonorrheal and post-gonorrheal cases are treated there daily. Seven of these nine patients had complained of their symptoms for a period of one year or more, and had not responded to the palliative treatment of prostatic and seminal vesicle massage, vaccines, baking or other measures.

It is impossible to formulate definite rules concerning operative cases, because many cases of seminal vesiculitis with or without acute and chronic gonorrheal rheumatism are entirely relieved of symptoms by palliative treatment. We feel that all cases of seminal vesiculitis, except, perhaps, chronic abscess formation, should have the benefit of palliative treatment before radical measures are adopted.

Kirwin [30] reported fifty cases of gonorrheal rheumatism treated at Bellevue Hospital by palliative means, and found that 70 per cent. of the patients were relieved and able to return to work. He states that

Fig. 6.—Right and left seminal vesicles, showing abscess of right seminal vesicle.

most of the 30 per cent. not relieved failed to continue treatment, and that about 10 per cent. needed surgical intervention.

CONCLUSIONS

1. All cases of seminal vesiculitis, except those with abscess formation, should have the benefit of palliative treatment before being subjected to operative procedures.

2. The seminal vesicles may be injected with antiseptics through the ejaculatory ducts.

3. This procedure improves the drainage of the seminal vesicles by dilatation of the ejaculatory ducts, and affords an easy method for medication and for seminal vesiculography.

4. Seminal vesiculography is useful in diagnosing chronic abscess formation of the seminal vesicles, stricture of the vasa deferentia or ejaculatory ducts and other pathologic or anomalous conditions of these organs.

30. Kirwin, T. J.: Gonorrheal Arthritis Treated Without Surgical Intervention, Urol. & Cutan. Rev., April, 1920.

THE SEMINAL VESICLES IN ARTHRITIS

WITH A DISCUSSION OF THE SYMPTOMATOLOGY AND THE SURGICAL AND NONSURGICAL TREATMENT *

DANIEL E. SHEA, M.D.
HARTFORD, CONN.

An understanding of the rôle played by the seminal vesicles in their relation to arthritis necessitates a brief review of the anatomy and physiology of these structures.

Grossly we can describe the seminal vesicles as a pair of convoluted organs derived from the wolffian ducts and lying at the base of the bladder, between it and the rectum in close proximity to the termination of the ureters. Picker, in an extensive study of these organs, classified their construction as:

(*a*) Simple straight tubes, 3.5 per cent.
(*b*) Thick twisted coils, with or without very small diverticula, 15 per cent.
(*c*) Thin twisted tubes, with or without very small diverticula, 15 per cent.
(*d*) Straight or twisted main channel with large bulbous diverticula, 33 per cent.
(*e*) Short main channel; large branched irregular accessory channels, 33 per cent.

The organ varies in length from 6 to 28 cm. dissected out, but, invested in its capsule is from 4 to 5 cm. in length, and has a capacity of from 3 to 11.5 c.c. It is 1 cm. in thickness and 2 cm. in width. On cross section, the vesicle presents an irregular, constricted and sacculated lumen, marked by fine recesses and ridges.

Microscopically, there are multilocular and numerous cavities lined with cylindric epithelium. There is a dense muscular coat, and a middle circular coat with numerous sympathetic ganglions arranged around the periphery. With its profuse blood supply and its thick layer of elastic tissue surrounding especially the cavities, it is, indeed, a striking picture.

The blood supply is derived from the inferior vesical and middle hemorrhoidal arteries, which enter the structure at the upper outer border. This should be remembered during operative attack, especially as this region is in close proximity to the ureters.

The nerves are from the pelvic plexus, and the lymphatics empty into the glands lying on the common iliac arteries. This very likely accounts for the persistence with which arthritic conditions locate in the lower extremities, as well as the prominence of these joints as sites of predilection.

In the past, much discussion has taken place as to the function of the seminal vesicle. One group asserts that the organ merely acts as a reservoir, basing its arguments on the fact that the spermatozoa are found within the vesicle, while another group asserts that the organ has a secretion that is necessary for impregnation. The latter group bases its opinion on the experimental work performed on animals by Walker and others, which shows that the removal of these organs causes a reduction in the percentage of fertility and a delay in impregnation, and also that the secretion found is necessary for the clumping of spermatozoa. Histologic section shows that the mucosal lining of the cryptic interior manifests secretory activity indicated

* Read before the Section on Urology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

by the number of goblet cells present. These recesses, however, are capable of harboring infection regardless of their being glandular structures, and micro-organisms have been demonstrated not only in these pits, but, on cross section, within the tissue of the organ. Frequently, examination of the vesicle content may be free from bacteria, but, at the same time, the tissue contains within its walls micro-organisms that throw products into the blood stream in the form of infectious emboli or toxins and are transmitted to a joint. In these cases, the seminal vesicles are overlooked as they are not necessarily palpable, and the expressed secretion may be negative on examination. Under normal conditions, the seminal vesicle contains epithelial cells, lecithin granules, occasional leukocytes, sago bodies and numerous spermatozoa, together with the above-mentioned secretion produced within itself.

To Fuller is due the credit of being the pioneer in the work on the seminal vesicle as a focus of infection, he having called to our attention the frequency with which the gonococcus invades these organs causing arthritis, and also advocating the surgical attack on this focus for relief. Later, Schmidt, Thomas, Cunningham, Squier, Young and others wrote extensively on the subject, but still these organs are overlooked in a general examination.

In presenting this paper, I not only desire to impress the necessity of examination and of immediate treatment in those cases of arthritis which are due to the seminal vesicles being the primary site of infection, as in extension of a gonorrheal infection, but, at the same time, I desire to call attention to cases in which the

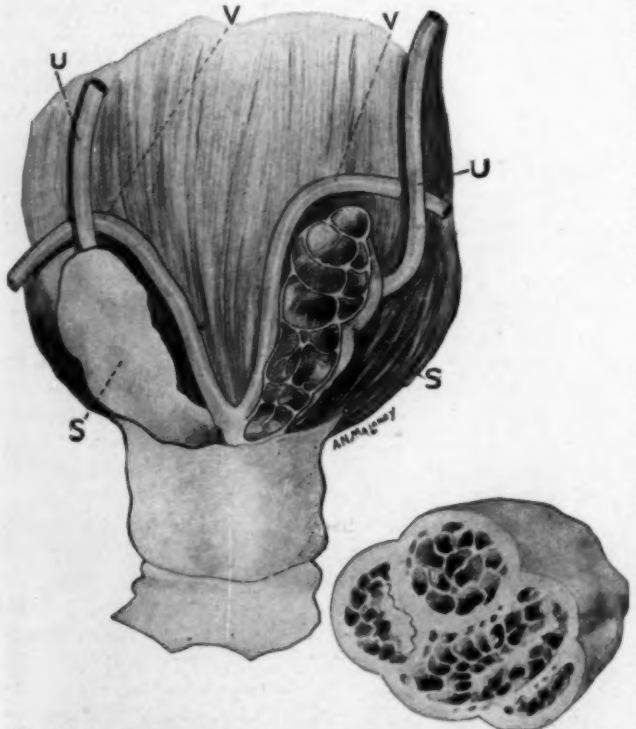

Fig. 1.—Sagittal section of seminal vesicle, showing sacculations; inset, cross-section of seminal vesicle, showing multiple crypts capable of harboring infection: *U*, ureter; *V*, vas deferens; *S*, seminal vesicle.

seminal vesicles are presumably the site of secondary infection from teeth, tonsils or some other area of infection, and in turn become the focus that supplies toxins to the synovial membranes in arthritis even after the primary area has been destroyed.

GONORRHEAL SEMINAL VESICULITIS

The most common form of seminal vesiculitis that comes to the notice of the urologist is that of gonorrheal origin. The infection extends from the posterior urethra to the ejaculatory ducts, and thus infects the seminal vesicle. The vesicle sacs, having been invaded

Fig. 2.—Posterior view of bladder, prostate and seminal vesicles; fascia of prostate partially removed: *L U*, left ureter; *R U*, right ureter; *R V*, right vas deferens.

by the gonococcus or any other pathogenic organism, enter a chronic inflammatory state due to hyperemia, round cell infiltration, and insufficient drainage. Infection of these organs is characterized by marked chronicity and their periodic expelling of septic material into the general circulation. These foci of chronic inflammatory infiltration remain undiscovered, and consequently unrelieved for years, often becoming surrounded by fibrous changes and remaining centers for the absorption of toxins indefinitely. The synovial membranes, offering poor phagocytic protection as they do, have a natural weakness for any invading organism, and consequently are natural areas of predilection.

NONGONORRHEAL SEMINAL VESICULITIS

Besides the gonorrheal seminal vesiculitis and its method of infection by continuation of an anterior urethritis, we have several paths by which infection may gain entrance to these sacs:

1. Young has called our attention to infection being eliminated in the urine, entering the vesicles by way of the ejaculatory ducts.

2. In septicemia, micro-organisms have been found in the seminal vesicles, evidently transmitted by the blood stream.

3. There is no doubt that infection can occur by toxins transferred from the lymph stream. Infection once having taken place, similar pathologic changes as were seen in the gonorrheal condition occur. This condition may continue into chronicity, and resulting arthritic changes are established.

Some of the bacteria transmitted in this manner are the pyogenic staphylococci, both *S. albus* and *S. aureus*, streptococcus, *B. coli* and the diphtheroid bacillus. Some authors assert that these organisms are present normally in the structures without exerting any pathogenic influence, and that the gonococcus arrives and sets up an inflammation causing a change in the nature of

the fluids present. This change causes a diminution of the antibacterial power and furnishes the organisms already present with a suitable culture medium whereby they increase in their virulence. Thus they continue the inflammation after the gonococcus disappears. Squier suggests that the gonococcus undergoes a mutation due to its environment.

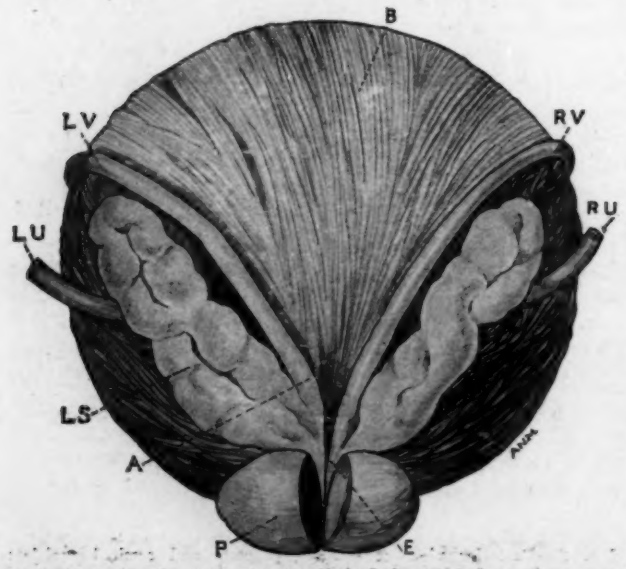

Fig. 3.—Posterior view of bladder, with ampulla of vas deferens and prostate; prostate incised longitudinally: *L V*, left vas deferens; *L U*, left ureter; *L S*, left seminal vesicle; *A*, ampulla of left vas; *P*, prostate gland (posterior surface); *B*, body of bladder; *R V*, right vas deferens; *R U*, right ureter; *E*, ejaculatory duct.

I believe that these organisms are not necessarily dependent on the gonococcus in order to cause inflammation, and are virulent enough on entering the seminal vesicles to produce these pathologic changes. Several of the cases reported here give a history that is absolutely negative as to gonorrhea.

In the following group of cases, every one of the patients had had arthritis for some period of time, and many of them had had other foci of infection removed with no effect on the arthritic condition. Among the areas previously treated were the tonsils, teeth, colon, and skin. In several of the cases the same organism was found in the original area of infection as was found in the seminal vesicle. Case 1, showing the teeth as the primary focus and a progression of the arthritic changes even after the removal of the teeth, is typical.

Case 1.—J. G., a man, aged 38, for the last eight months had complained of arthritis in the right shoulder following an injury. He was treated by several physicians until one man suggested a roentgenogram of the shoulder and teeth. He was advised to have the teeth removed, and records show that there was purulent pus present containing staphlococci. After removal of the teeth and treatment of the shoulder had been instituted, he found relief, and there was some improvement for a short time. Two months later, the arthritic condition reappeared and at the same time he noticed a slight mucopurulent discharge from the urethra. He was treated for four months and decided to consult some one regarding the urethra. At this time he came under my care, which was six months after his first roentgen-ray examination and after the extraction of his teeth. The history was negative as to gonorrhea, and a urethral smear showed a mixed infection with no gonococci. Urologic examination elicited the fact that the seminal vesicles were enlarged and infiltrated, and slightly sensitive to the touch. Expressed secretion showed staphylococci and pus cells present. At the time, another roentgenogram of the shoulder was taken and showed that the arthritic changes had progressed. Under treatment of the seminal vesicles, the arthritic condition improved, and at this time, one year later, there has been no recurrence.

The significance of this case is that the teeth were the primary focus, but after the removal there was a progression of the arthritis, as shown by the roentgenogram. The same organism was found in the seminal vesicle as was isolated in pus from the teeth. One would be led to believe that the seminal vesicle was undoubtedly infected by the teeth, and in turn continued to throw off similar toxin as the teeth, which located in the already damaged shoulder.

Another typical case in this group is the following:

Case 2.—H. S., a man, aged 24, thin and poorly nourished, in November, 1921, complained of painful swollen knees, the left knee being more painful than the right. At the time, the tonsils were hypertrophied and cryptic, and a cheesy exudate was contained within them. The tonsils were removed and staphylococci were found. After removal of the tonsils, the pain disappeared entirely from the right knee, and was diminished considerably in the left. Some swelling continued in the left knee, and the pain gradually became more intense until June, 1922, when I saw the patient. General examination was negative, with the exception of arthritis of the left knee and endocarditis. The patient denied any history of gonorrhea, but for the last six weeks had had frequency of urination. Urologic examination showed the seminal vesicles to be slightly distended, and, on stripping, the contents contained pus and staphylococci. Under treatment, the patient's condition improved, but, unfortunately, he discontinued treatment and I have not been able to locate him since.

In this case, evidence points to the original focus of infection located in the tonsils, after the removal of which the right knee was cured; but there was evidently damage to the cartilage in the left knee, which received a continued supply of toxins from the seminal vesicles.

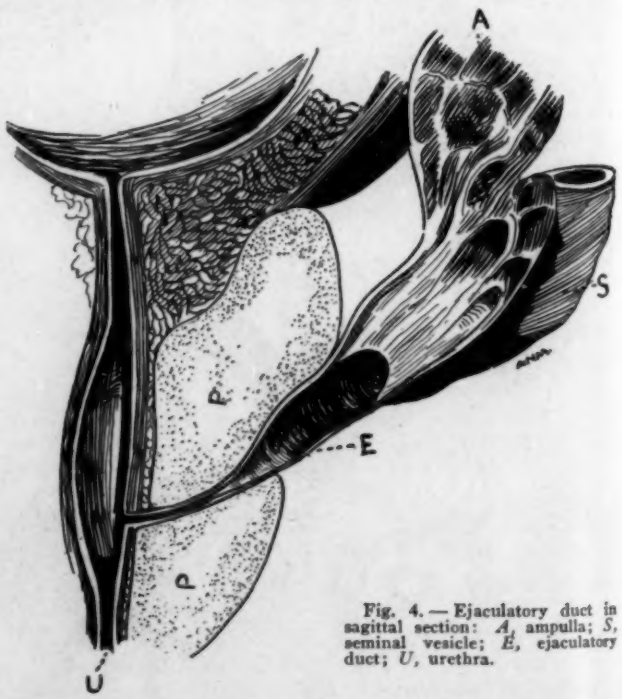

Fig. 4.—Ejaculatory duct in sagittal section: *A*, ampulla; *S*, seminal vesicle; *E*, ejaculatory duct; *U*, urethra.

In this condition, roentgen-ray examination shows a progression of the arthritis changes.

Table 1 shows a series of cases that would lead one to suspect the seminal vesicles as supplying the infection to an arthritic joint after the source supplying the initial infection had been eradicated.

In a group of arthritic cases (Table 2) giving a history of recent gonorrhea, the gonococcus was not

TABLE 1.—*Arthritis Cases with no History of Gonorrhea*

No.	Name	Age	Primary Focus	Causative Organism	Joints Affected	Organisms Present in Seminal Vesicle
1	J. G.	38	Teeth	Staphylococcus albus and aureus	Right shoulder	Staphylococcus albus
2	H. S.	24	Tonsils	Staphylococcus albus	Right and left knee	Staphylococcus albus, hemolytic streptococcus
3	G. F.	32	Intestinal	Bacillus coli	Left shoulder, wrists and both knees	Bacillus coli
4	W. R.	29	Tonsils	Streptococcus viridans, diplobacillus	Ankles, knees, left elbow, wrists and sternoclavicle	Streptococcus viridans, Staphylococcus albus
5	M. F.	33	Carbuncle of neck	Staphylococcus aureus, Staphylococcus albus	Both knees and right elbow	Staphylococcus aureus and albus
6	C. H.	56	Teeth	Staphylococcus albus, Staphylococcus aureus	Ankles, both wrists and right knee; exostosis of heels	Staphylococcus albus, Staphylococcus aureus
7	G. G.	23	Tonsils	Streptococcus viridans, Staphylococcus albus	Ankles, knees, wrists and sternoclavicle	Streptococcus viridans, Staphylococcus albus

always found on expressing the vesicles. In these cases it is just as imperative for the urologist, after suitable treatment of the seminal vesicles is without noticeable benefit to the arthritic conditions, to examine other sites for infection, as it is for the internist to examine the vesicles in arthritis. Often this is neglected in referred cases, the urologist relying on a previous examination. In several of the cases recorded in Table 2, infection was located in other parts of the body which aided materially the gonorrheal infection attacking the joints, as was shown by the fact that the joint symptoms improved much more rapidly after eliminating all of the infected areas.

SYMPTOMATOLOGY

Pain.—Symptoms other than rheumatism that accompanies seminal vesiculitis vary according to the acuteness of the condition. Locally, these patients may have pain over any area of the genito-urinary tract, owing to the distribution of the nerve plexuses in this area. Often there is pain over the kidneys, sacral region, pubic region, inguinal region, rectum, testicle and penis. In chronic cases there is a larger variety of pains than in the acute, but in all cases the arthritic pains predominate over the others, as the patient is reminded of them on moving.

Sexual.—In many of these cases the sexual desire is increased, owing to the irritation, and constant impulses of sexuality are sent out. In about 30 per cent. of the cases there are symptoms representing every stage, from loss of desire to impotence. There are frequently present conditions such as painful orgasm, incomplete erection, premature ejaculation, pyospermia and hemospermia.

Urethral.—The most frequent urethral symptom is chronic discharge that resists the usual forms of treatment. Many patients complain of urethral discharge after bowel movement or urination. Very often patients complain of itching in the deep urethra.

Urinary.—The urinary symptoms, when present, consist of frequency, urgency, and pain at the end of urination. Frequency and dysuria are the more common symptoms, owing to a chronic posterior urethritis. Acute retention is present only in the presence of a complicating acute prostatitis, with much enlargement.

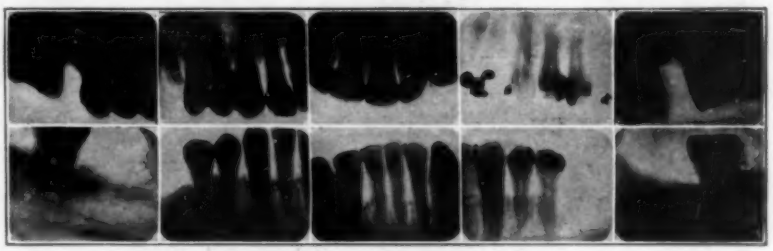

Fig. 5 (Case 1).—Appearance of teeth: pus in several sockets.

TABLE 2.—*Cases with History of Recent Gonorrhea*

No.	Name	Age	Diagnosis	Arthritic Areas Affected	Organisms Found in Seminal Vesicles	Other Foci of Infection
8	C. K.	29	Chronic seminal vesiculitis	Sacro-iliac, right knee, right ankle, and left shoulder	Gonococcus, Staphylococcus aureus, Streptococcus viridans	Tonsils: fossae still infected three weeks after tonsillectomy
9	C. G.	48	Chronic seminal vesiculitis	Both knees; painful deformed joints of both hands	No gonococcus found; Staphylococcus aureus, Staphylococcus albus	Infected teeth and sinuses
10	M. H.	25	Subacute seminal vesiculitis	Multiple acute arthritis involving angles, knees, wrists, elbows, shoulders, cervical areas and sacro-iliac joint	Gonococcus, Staphylococcus albus, diplobacillus	Infected tonsils
11	H. M.	36	Subacute seminal vesiculitis	Ankles, knees, toes of both feet and right shoulder	Gonococcus, Staphylococcus aureus	Boils on neck and right arm
12	F. S.	30	Chronic seminal vesiculitis	Both knees	No gonococcus found; Staphylococcus albus, hemolytic streptococcus	Tonsils
13	S. G.	32	Subacute seminal vesiculitis	Both ankles, both knees, right wrist	Gonococcus	Infected antrum
14	D. B.	44	Chronic seminal vesiculitis	Painful deformed joints of both hands, right shoulder	No gonococcus found; Staphylococcus albus, Staphylococcus aureus	Infected teeth

Owing to the relation of the ureters, it is possible in the case of a markedly distended seminal vesicle for the function of the ureter to be interfered with by pressure.

TREATMENT

Results of treatment, either surgical or nonsurgical, are, in the majority of cases, gratifying. Palliative treatment requires a much more prolonged course than operative treatment; but as there is a physiologic function to the seminal vesicles, certainly the nonsurgical procedure should be resorted to first. However, it is well to bear in mind that palliative treatment may be used for too long a period, and also that there are certain patients in whom infectious material cannot be removed from the seminal vesicles owing to certain infected areas that cannot be kept sufficiently opened to drain through the natural channels.

It might be well to state that most cases of seminal vesiculitis are accompanied by pathologic changes in the prostate gland, and this organ should be included in any method of treatment.

NONSURGICAL TREATMENT

In acute seminal vesiculitis, in which the ejaculatory duct is in a state of acute inflammation, there is an occlusion of these ducts, preventing the emptying of the vesicles. In the presence of this condition, stripping of the organs is useless, and the conservative use of vaccines along with hot and cold rectal douches is the

treatment of choice. After the acute stage has subsided, stripping of the seminal vesicle is indicated. Stripping eliminates a large quantity of débris, as generally one finds mucus, pus, red blood cells, bacteria and degenerated epithelial cells within the sacs. This

Fig. 6 (Case 1).—Bone changes started in shoulder.

accumulation tends to distend the organ by filling up the sacculations. Stripping also increases the blood supply to the part, as well as replacing the function of peristalsis to the vesicle.

In this stage of the disease we have used the vas puncture with injections of 10 per cent. collargol, as recommended by Belfield. In the acute gonorrheal type, we have also injected mixed gonococci vaccines with good results. Accessory to the stripping of the vesicle, local urethral medication and irrigation, as well as vaccines, has been a great benefit, especially in the milder cases.

Even in the cronic sclerotic type of seminal vesicle, massage of the organs is advisable before resorting to surgical procedure, as it is sometimes possible to break up connective tissue adhesions, and by loosening these bands which bind down the seminal vesicles, the organs start functioning so that later it is possible to perform a vas puncture. If this treatment does not bring about the desired result, operative procedure can always be resorted to.

SURGICAL TREATMENT

There are certain types of diseased vesicles that of necessity require surgical intervention. In the cases of suppurative vesiculitis with abscess formation. vesiculotomy is indicated, as there is no other means for drainage to take place. It is in this type of case that the almost miraculous results occur as far as the arthritis is concerned. The arthritic condition has been, as a rule, of short duration, with only a periarticular infiltration of the synovial membranes, with no intra-articular swelling or erosion of the cartilage. In many of these cases, pain and swelling disappeared in as short a period as from twenty-four to forty-eight hours. In the drainage of these cases, care must be exercised in locating all areas of infection in the seminal vesicle, as in two of our cases a relapse occurred, necessitating the performance of vesiculectomy at a later date.

In the hard sclerotic type of vesicle, the operation of choice is vesiculectomy. In all cases, operative procedure was resorted to only after all palliative measures had been exhausted.

ACCESSORY TREATMENT

After eliminating the focus of infection, and during the course of treatment, appropriate accessory treatment should be used. Included in this category would be baking, oil of wintergreen dressings, casts, heat and indicated surgical procedures. Joint surgery is too frequently left until the damage is done, and no good can be expected or further harm possible. When intra-articular infiltration has been present for a long time, resulting in erosion of cartilage and atrophy of bone, the best that can be expected is an improvement of the joint condition.

SUMMARY

I have divided my groups of cases into the gonorrheal and nongonorrheal types. Of the gonorrheal type giving a definite history of venereal infection, there were twenty-three cases, while of the nongonorrheal there were seven.

Considering both groups as one, we have the following information: The ages ranged from 16 to 58 years; the duration of the disease, as stated by the patient on examination, was from two days to four years; the cause as given by them was: recent gonorrhea, 45 per cent.; exposure to cold or dampness, 14 per cent.; excessive use of alcoholic beverages, 6 per cent.; no known cause, 35 per cent.

Fig. 7 (Case 1).—Progress of bone changes, six months later, after extraction of infected teeth.

In order of frequency, the joints affected were: knee, ankle, wrist, feet, hips, shoulder, hand, elbow, heels, sternoclavicular and fingers. Contributory foci of infection were: teeth, tonsils, intestine and furuncles. Accompanying urologic symptoms were located in the urethra, bladder, perineum, testis and anus.

Organisms other than the gonococcus found were: *Micrococcus catarrhalis, Staphylococcus albus* and

aureus, Bacillus coli communis, Streptococcus viridans, hemolytic streptococcus and diphtheroid bacillus.

Treatment consisted, as a rule, of nonsurgical methods; namely, massage of the seminal vesicles and prostate, heat to the parts and vaccines. Direct medication to the seminal vesicles was used in several cases. Surgical intervention, consisting of vesiculectomy, was used only in very acute conditions in which the contents of the vesicles could not be expressed; also, in one case of hard, fibrous, indurated vesicles that were producing much discomfort.

Fig. 8 (Case 2).—Beginning bone changes in knee.

TABLE 3.—*Results of Various Forms of Treatment*

Diagnosis	Number of Cases	Treatment Used	Cured	Improved	Unimproved
Acute suppurative seminal vesiculitis	6	Vaccine, 6; vas puncture, 2; vesiculotomy, 2; joint surgery, 1	2	4	..
Chronic catarrhal seminal vesiculitis	18	Palliative treatment, 18; vaccine, 8; vas puncture, 6; casts and splints, 7	1	9	8
Acute catarrhal seminal vesiculitis	3	Vaccine, 2; palliative, 3; vas puncture, 1; splints, 2; joint surgery, 1	1	1	1
Chronic sclerosed seminal vesiculitis	1	Palliative; vaccine, vesiculectomy	..	..	1
Chronic interstitial seminal vesiculitis	2	Palliative, 2; vaccine, 2; baking, 2; massage, 2; heavy casts, 2	..	..	2

CONCLUSIONS

1. Rectal investigation in all cases of arthritis in the male is necessary for a complete examination.

2. Every case of arthritis accompanied by vesiculitis in which there is a focus of infection in some other area should receive suitable accessory urologic treatment.

3. Cases of arthritis accompanied by vesiculitis giving no history of gonorrhea should be examined for other foci.

4. Early treatment of the seminal vesicles is essential for beneficial results. Improvement in arthritic changes is the most that can be expected after changes have taken place in the cartilage and bone.

Hartford-Connecticut Trust Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. DELZELL AND LOWSLEY, AND SHEA

DR. GEORGE F. FARMAN, Los Angeles: The successful work of Dr. Delzell in the treatment of seminal vesiculitis by direct injection of the ejaculatory ducts through the endoscope is a distinct advance. It is necessary to have the tract free and emptied of pus and fluid before injection can be effective. The cure of seminal vesiculitis, with or without metastatic complications, is brought about in a similar manner. No one method of treatment has proved much superior to another. Generally a combination of therapeutic measures is best, but the physician must employ the mode of therapy that is best suited to the individual case. Cure of seminal vesiculitis results from a group of biologic changes that occur spontaneously, or which are induced by certain methods of treatment. This group of changes may be called the "focal reaction." The most important factor involved in the mechanism of the focal reaction are cellular stimulation and alterations in the permeability of the cells. Immunity results from the activities and products of the living tissue cells. A variety of agents serve to bring about the focal activation—specific or nonspecific injections of vaccines, the injection or administration of chemicals, direct physiotherapeutic stimulation by prostatovesicular massage, applications of heat, and also the toxic material liberated from the inflammatory focus itself. In seminal vesiculitis, with joint involvement, all methods of treatment are directed mainly toward eradication and cure of the focus of infection. Complete removal of the deep genital focus by seminal vesiculectomy or extensive seminal vesiculotomy and prostatotomy arrests the activity of the process, permitting repair to set in. The success of prostatovesicular massage seems to depend clinically on whether or not the operator is skilful in his manipulation to promote free drainage from these structures, and also on whether there is sufficient stimulation given to set up tissue reaction. The injection of certain chemicals has proved particularly efficacious in relieving joint pain and in decreasing inflammation. Chemical therapy is rapid in action, but not lasting. The slower biologic changes and reactions induced by physiotherapeutic measures, and protein therapy have a greater field of usefulness in effecting permanent cure. In the gonorrheal arthropathies, the degree of therapeutic result following vaccine injections seems to depend on the severity of the systemic reaction. Whether or not the specific vaccines are more efficacious than the nonspecific remains for future demonstration. Failure with foreign protein therapy seems to be due to failure to graduate the dose, and to the

Fig. 9 (Case 2).—Progress of bone changes, seven months later.

employment of too small a dose. The metastatic complications of gonorrhea can often be prevented by the more careful treatment of the original infection.

DR. JAMES R. DILLON, San Francisco: Consideration of the pathology leaves one in doubt as to the efficacy of dilation of the ejaculatory ducts, or treatment by vasotomy. In my hands the latter operations were complicated by a high percentage of epididymitis, which discouraged my continuation of them. Possibly I selected the wrong cases. For a few years I classified my cases into the four groups quoted by Dr. Delzell, as an indication for drainage or for excision. Lately, I have followed the palliative measures in treatment, except in extreme cases, when I have performed vesiculectomies, which have given the best results. In the normal vesicles the mucosa is thrown into thin folds, giving off secondary divisions and dividing the vesicular lumen into labyrinthine spaces. In the cystic types of vesiculitis, the walls are stretched and the folds shortened to processes, with the columnar epithelium flattened or denuded where there is round cell infiltration in the stroma, with the secretion in the lumen attached by sparse fibrils. The early stages of the noncystic lesions show a thickening of the secreting folds due to round cell infiltration, and later dilated blood vessels with denuding of epithelium at the ends of the folds where buds of granulation tissue are thrown out which coalesce and shut off the underlying recesses. Fibrous thickening in the walls of the vesicle takes place and exerts compression. Later these granulating ends of the mucous folds become more fibrous, compressing and closing the underlying recesses, which are filled with inflammatory exudate, secretion and cellular débris; also the lumen of the vesicle becomes narrowed. In the final stages, part of the lobules may be more or less normal; others, cystic and containing cellular débris, while many are nearly obliterated by both compression of fibrosis and inflammatory reaction. The perivesicular areas also undergo round cell infiltration, later leukocytic infiltration, and in some cases small abscess formation, and, in time, are supplanted by dense fibrosis, which in a few cases I have found a quarter of an inch in thickness about the vesicle.

DR. LOUIS CLIVE JACOBS, San Francisco: I should like to know about the frequency of epididymitis following the catheterization and injection of fluid into the ejaculatory orifices. I have had no difficulty in the technic of injection, but my cases were usually followed by epididymitis. In order to dilate the orifices, I have used the fulgurating electrode. Having observed that the urethra contains other orifices, which connect with the prostate, I have likewise dilated these and, when necessary, have fulgurated, but not too deeply, on account of several cases resulting in large cavities, followed by some incontinence of urine. Curing a vesiculitis necessitates the clearing up of various lesions in the posterior urethra, in order to obtain permanent results.

DR. B. A. THOMAS, Philadelphia: The importance of the seminal vesicles as harborers of infection in the arthritic and cardiovascular cases, as well as in the changes that take place around the neck of the bladder, cannot be overestimated. One of the most gratifying things concerning this subject is what seems to be a desire on the part of urologists to get away from surgical intervention of the major character and try to relieve the condition by more or less palliative measures in those cases in which massage proves insufficient. I believe that, in from 75 to 90 per cent. of the cases, proper massage is all that is needed for seminal vesiculitis, and there are cases in which only seminal vesiculectomy is sufficient to eradicate the infectious foci in the vesicles. However, in certain types of cases in which there is a condition of seminal pyovesiculitis, or seminal vesiculitis, infiltration results but no symptoms of a marked character, even to the onset of complete retention of urine. In that particular type certainly vesiculectomy has to be done, but these instances are rare. I think the trend of thought expressed this morning should be that when we resort to a definite, radical surgical procedure we should attempt to remove the vesicle, or perhaps one half of the vesicle, and destroy all the remaining diverticula, or crypts, or what not, by the use of phenol (carbolic acid). It is important when resorting to surgical procedures to remove the vesicle completely, if possible.

DR. MARTIN MOLONY, San Francisco: Most observers agree that to find the gonococcus in these cases is very difficult. There are two methods of injecting the vesicles: the Belfield method through the vasotomy operation, and the other, that of injecting through the ejaculatory ducts. I first discovered, eight years ago, after doing a vasotomy according to the Belfield method and then later on doing the usual Janet irrigation by the urethra with a nozzle, that the solution came through the vas deferens in the scrotum in quite a good stream. I then injected forward by the vas and backward by the Janet method, filling the vas and vesicles both ways until I got tired of it. In one case of chronic vesiculitis and with a large diverticulum of the posterior urethra, I have taken several pictures by the Janet method showing the vesicles opening into the diverticulum. After the vesicles had been filled twenty or thirty times with a silver preparation and other drugs and fully distended, the discharges still contained gonoccoci. This method was not encouraging; on the contrary, by the Belfield method, we have had very good results: distending the seminal vesicles fully through the vas deferens is quite a rational procedure. On the contrary, adopting the opposite route through the ejaculatory ducts does not always fully distend the vesicles, and may sometimes bring on acute epididymitis. This also may occur with the Janet or syringe method of irrigation, as a result of pushing the disease farther up.

DR. ANDERS PETERSON, Los Angeles: When a patient is extremely ill, suffering from arthritis, with a high temperature and all the troubles that go with it, it certainly seems that the vesicles are harborers of infection. The most common affection I am aware of as a cause of vesiculitis is gonorrhea. The fact that the epididymis on one side or the other, or perhaps on both sides, becomes involved is interesting, and I should like to have Dr. Delzell tell us how often the epididymis was associated, and whether anything was done to handle the epididymis when it was associated with these cases of arthritis.

DR. ARTHUR M. ROGERS, Los Angeles: I think it has been well recognized that the vast majority of these conditions arise primarily from gonorrhea of the urethra and other structures. If that is true, we should emphasize the treatment of the primary disease. I have for years been flooding the system with water in early gonorrhea, plain drinking water in such quantities as will keep the tract flushed and thereby prevent the ingress of these infecting organisms into the diverticula.

DR. W. R. DELZELL, New York: Dr. Shea emphasized the teeth and tonsils in these cases of seminal vesiculitis. I have seen quite a number of cases in which it was necessary to extract the teeth and remove the tonsils before going on. I agree with Dr. Farman that there is no one method sufficient, and we have just proposed this method for use with the others. In the one case that was illustrated we thought that seminal vesiculectomy was necessary because of the findings. We had two cases of epididymitis in our series of thirty injections. Drs. Young and Waters report many cases without any epididymitis. When the epididymis is involved chronically with pain, we do the epididymotomy operation first; if that is not sufficient, we do an epididymectomy. We usually let the first operation serve for a year or more before taking the epididymis out.

DR. DANIEL E. SHEA, Hartford, Conn.: The particular point I wish to emphasize is that, in the first group of cases, indications pointed to other areas of infection, and the seminal vesicles were overlooked as foci. In the second group, the seminal vesicles alone were treated as the causative factor of arthritis while other areas were neglected. It is just as imperative for the men in our specialty to make a general examination in their arthritic cases as it is for the physician in general practice to examine the seminal vesicles. Most men in the specialty, when a case is referred by a man in general practice, take it for granted that the rest of the anatomy has been examined thoroughly with the exception of his own phase of the work.

FACTORS RESPONSIBLE FOR REDUCTION OF MORTALITY AND MORBIDITY IN PROSTATECTOMY *

B. A. THOMAS, M.A., M.D.

Professor of Urology, Graduate School of Medicine, University of Pennsylvania; Genito-Urinary Surgeon, Presbyterian Hospital

PHILADELPHIA

During the years preceding the World War, I was strangely impressed by the fact that there were two schools of prostatectomists. One contended that the only proper way to remove the gland was suprapubically; the other insisted that the perineal was the exclusive route, and practically refused to employ the suprapubic method. It seemed to me that the attitude of each was rather dictatorial, bigoted and obviously wrong, that the patient was not always accorded a square deal, and that both would reap better results and reduce to a lower level their already admirable low mortality rates by recourse to the impartial employment of both methods and more exact discrimination as to the particular route to be adopted in each case. In other words, the surgeon should be qualified and prepared to perform the particular operation indicated by the pathologic condition presented; not, dogmatically, to subject the patient to any particular route, simply because he was identified with and wedded to it, and preferred to do the operation that way because of his reputation or training. Therefore, in 1914, I [1] made a plea for greater discrimination in deciding this point and the adoption of both routes, as the logical outcome of a much mooted question, if we desired to conserve our patients' best interests. I believe that since that time the gulf dividing these contenders has become less pronounced, that more surgeons are practicing both methods, and that a larger proportion of patients are receiving their just deserts, with a reduced mortality and morbidity. However, there is still room for improvement.

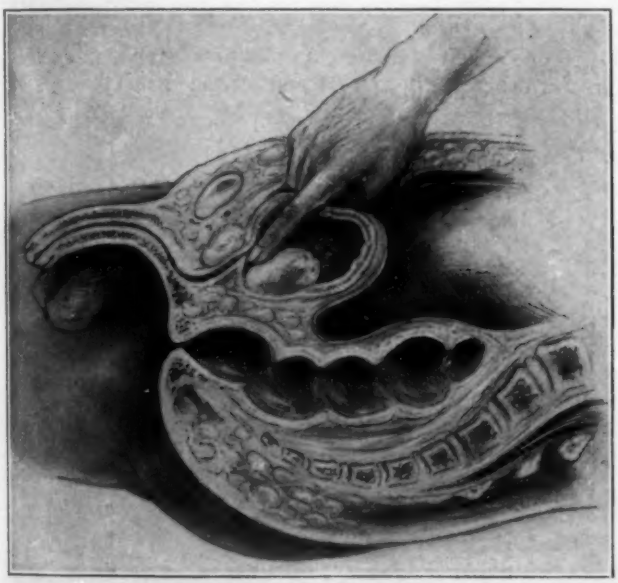

Fig. 12.—In many cases, with the index ungloved finger introduced through the vesical orifice into the prostatic urethra, the gland can be readily enucleated without assistance by counterpressure by rectum.

The object of this paper, therefore, is to recall and emphasize certain assertions and factors relative to prostatectomy which at that time I believed to be paramount, and which today continued experience has dictated to be responsible for the present low rate of mortality and morbidity. I have little new or original to offer, but refinements in technic and elaboration of fundamental principles should ever be welcome, and it may not be inadvisable to present my management of the prostatic patient in view of unusually satisfactory results.

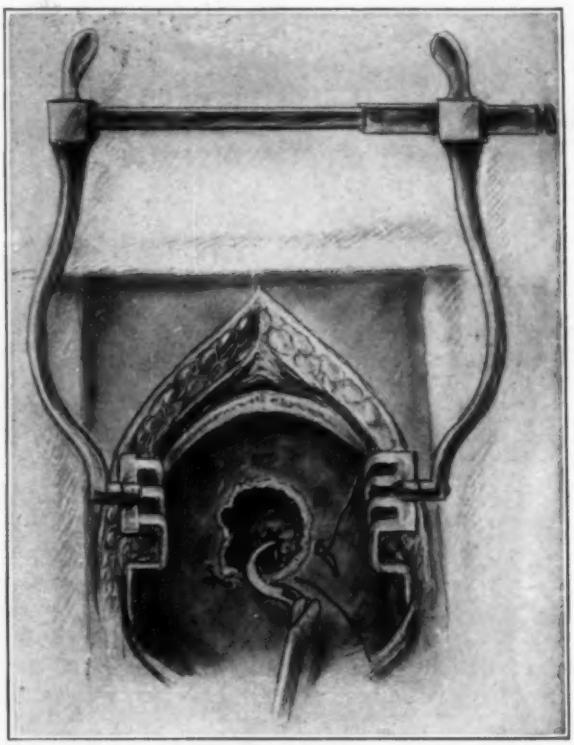

Fig. 14.—Control of excessive bleeding by suture, using Young's boomerang needle, the best for the purpose.

It is generally conceded that about one third of all men have prostatic hypertrophy, that one half of these have symptoms, that one fifth need treatment, that 50 per cent. die in five years of the onset of obstruction, if not operated on, and that catheter life shortens this to two and a half years. Thus I feel that the golden rule should prevail: Operate if you dare to and catheterize only if you have to. There is no class of patients in the infirmities of old age called on to undergo a major surgical operation of the gravity of prostatectomy, in which the results are better or more beneficial. This is due to the fact that in none is there as much attention given to the qualifications of the patient for the operation—this to the credit of the urologist. The prognosis of the prostatic patient is truly remarkable, and is proportional to best management, just as the successful result is proportional to the accurate diagnosis of the pathologic condition present. Mathematically, it may be thus expressed:

Prognosis : Treatment :: Result : Pathology

or

Prognosis × Pathology = Result × Treatment

* Read before the Section on Urology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

* Because of lack of space, this article is abbreviated by the omission of several illustrations. The complete article appears in the Transactions of the section and in the author's reprints.

1. Thomas, B. A.: The Rôle of Functional Kidney Tests and Preoperative and Postoperative Treatment in the Reduction of Prostatectomy Mortality, J. A. M. A. **63**: 1909-1915 (Nov. 28) 1914.

I feel that refinements in the diagnosis and treatment of the unfortunate prostatic patient have been reduced to rock bottom and that further reduction in mortality and morbidity on this basis is unreasonable, if not impossible. It would seem that the next great advance must lie in the education and conviction of the general practitioner and layman that the patient should seek and receive surgical treatment earlier, and not be

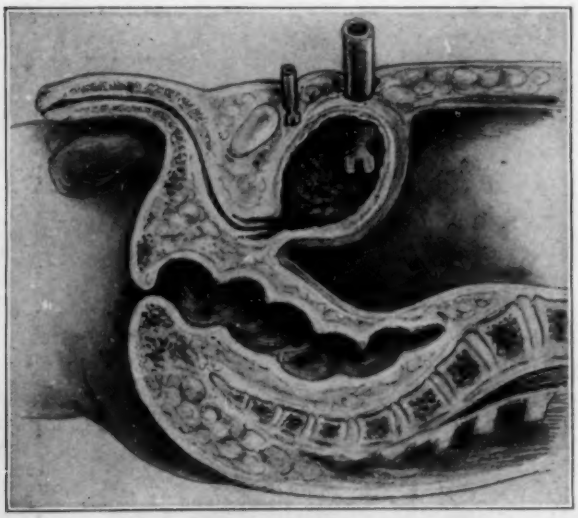

Fig. 16.—A large rubber fenestrated drainage tube, placed as shown, is brought out of the upper angle of the bladder wound, and a second small tube passes through the space of Retzius down to the sutured bladder.

placated with urinary antiseptics and catheters until he has become a surgical derelict beyond the pale of mortal aid. It is appalling to realize how often patients are permitted to drift into this inexorable trap from which no man returns. In my experience they have amounted to 19 per cent., including the deaths following bladder drainage by catheter or preliminary cystotomy. Is not the situation comparable with appendicitis? So soon as prostatectomy is resorted to as early comparatively as is appendectomy, just so soon will the ravages of prostatic hypertrophy be reduced and the present low mortality and morbidity rate be shaved.

The factors that stand out preeminently and should govern the management of the prostatic patient are: (1) determination of operability; (2) discrimination as to operative route; (3) preoperative care; (4) operative technic and manner of enucleation, and (5) postoperative care.

DETERMINATION OF OPERABILITY

The fundamental consideration is naturally the examination and study of the patient with respect to his operability by any route. In our series this has resulted in the disqualification of almost one fifth of the cases. The most important investigation in this decision is the kidney function. Attempts have been made in recent years to undervalue this, but the fact remains that it is the desideratum that has reduced the prostatectomy death rate in two decades from 50 to less than 5 per cent. Many deaths have been ascribed to hypostatic pneumonia, myocarditis, etc., while the actual cause, deficient kidneys, has been overlooked or ignored. Volumes have been, could be and, doubtless, will be written on the subject of kidney function. Experience has eliminated all but two of the many functional kidney tests from our practice—indigocarmin and phenolsulphonephthalein. In those exceptional cases in which catheterization or one of the tests of elimination is not practical, the determination of the blood urea nitrogen becomes indispensable. As a routine, for many years, I have pinned my faith to the index of elimination of indigocarmin and have come to place implicit confidence in its determination as a control of surgical risk. The method of determining the index has been detailed elsewhere.[1] Recently,[2] I have attempted to work out its value in the case of phenolsulphonephthalein for those who may prefer to employ that test with most gratifying results. Inspection of Figures 1 to 8 will show the parallelism and reliability of the index of elimination as applied to indigocarmin and phenolsulphonephthalein, intravenously and intramuscularly.

Next in importance in the determination of the functional stability of the kidneys stands the condition of the cardiovascular system. Myocarditis, frequently a secondary development from damaged kidneys and a forerunner of uremia, has long been recognized as a dangerous contraindication to prostatectomy under general anesthesia. Nevertheless, in many of these patients the operation can be successfully performed under spinal anesthesia or scopolamin-morphin narcosis. Not the least important consideration in this connection is the blood pressure. Two of our four deaths are directly attributable to failure to appreciate the prognostic significance of this important factor. In one with a systolic pressure of 198 and diastolic pressure of 96, the pressure was doubtless too high; in the other, with a systolic pressure of 102 and a diastolic pressure of 58, it was unquestionably too low, in the following respect. We have operated on many patients with low systolic pressures (as shown in the accompanying table), and in five successful cases it registered below 110; but in each case the diastolic pressure was over 60. On the other hand, two patients with a diastolic pressure of less than 60 were successfully operated on, but in both cases there was quite a high or satisfactory systolic pressure. The sole death associated with very low blood pressure is the one noted above.

Fig. 17.—Method of closure of bladder: Large tube brought out of upper angle of incision; small tube below in space of Retzius.

2. Thomas, B. A., and Hsu, W. O. Min.: Studies on the Output of Indigocarmin and Phenolsulphonephthalein After Intravenous and Intramuscular Injection, Urol. & Cutan. Rev. **26**, No. 7, 1922. Milliken, L. F.: The Index of Elimination of Phenolsulphonephthalein as an Indication of Surgical Risk, read before the Philadelphia Urological Society, May 28, 1923.

Thus, we have concluded that in any patient with a systolic pressure of less than 110 and a diastolic pressure lower than 60, operation should not be advised. Such a case is shown in Figure 9, in which, irrespective of a satisfactory kidney function, the blood pressure remained persistently at dangerous low levels, and operation was considered inadvisable. In recent years we have also had assistance rendered by the electrocardiograph in determining surgical risk, and I have felt that, when taken in conjunction with proper physical examination, it is an important aid in determining the cardiovascular qualifications of the patient.

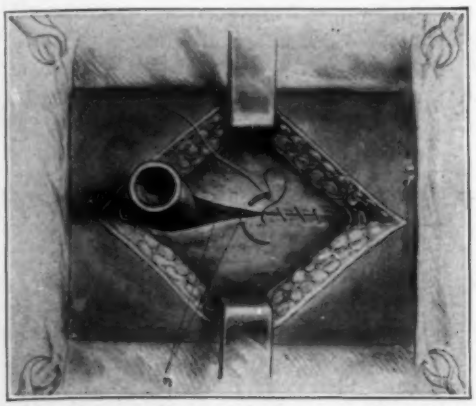

Fig. 18.—After water-tight suture of the bladder up to the large tube, it is rotated downward and brought out of the lower angle of the skin wound in conjunction with the small tube from Retzius' space. One or two plain gut sutures, *S*, are placed in the rectus muscles and the fascia is closed by continuous suture above.

I am indebted to Dr. James E. Talley of the medical staff of the Presbyterian Hospital for the following personal communication relative to the cardiovascular qualifications of these old men:

The necessity for operation on the prostate so frequently falls in the decades when cardiac degenerations are common that it is necessary to consider carefully whether or not the heart, especially when it shows definite evidences of degeneration, will withstand the added strain of operation.

In fact, whatever the condition, whether it be valvular or myocardial, there is not any better indication that the patient will probably stand operation than the fact that he is up and around; in other words, that his compensation is fair.

Patients with genuine anginal trouble are ordinarily not good risks for operation. The same is true of aortic lesions accompanied by much pain. In both cases, the absolute necessity for operation must be clear before one feels justified in taking the risk. On the other hand, myocardial degeneration as shown by the various arrythmias is less of a contraindication to operation than one would have suspected. Patients with auricular fibrillation without signs of cardiac failure, and with an apex rate that is only slightly above normal, stand operation very well. The number of cases of auricular flutter is small, but, on the other hand, they are common in old men at the very age when prostatic trouble comes.

Although one's individual experience is small in this respect, it still seems good practice to convert flutter into fibrillation or sometimes into a regular rhythm by means of digitalis administration, and then operate.

In heart block of all degrees, unless the patient is showing some signs of Stokes-Adams syndrome, or other signs of cardiac failure, operation is ordinarily well borne. Many of these patients have a good ventricular action which carries them through stress fairly well. In fact, some patients who have shown symptoms of the Stokes-Adams syndrome while passing from partial to complete block are today in much better condition for operation than they were some years ago.

Intraventricular block, as shown by lagging in one or the other branch of the main bundle, need not be a contraindication to operation. Some of the patients stand it well. In the interval between attacks, patients with paroxysmal tachycardia have stood operation well.

Blood Pressure Readings

Systolic		Diastolic		Pulse	
A	A	B	B	C	C
165	135	120	80	45	55
135	158	80	95	55	63
162	138	93	70	69	68
185	170	80	120	105	50
145	120	80	60	65	60
198*	130	96*	70	102*	60
142	140	90	84	52	56
175	184	120	86	55	98
152	144	85	72	67	72
170	115	98	72	72	43
156	140	78	80	78	60
115	135	70	80	45	55
155	170	90	90	65	80
152	146	85	98	67	48
123	102*	70	58*	53	44*
156	110	102	65	54	45
120	155	70	90	50	65
167	160	90	95	77	65
155	132	95	95	60	37
116	140	80	85	36	65
130	150	85	88	45	62
135	130	80	65	55	65
115	140	65	95	50	45
153	118	60	68	93	50
128	132	85	86	43	46
100†	105†	70†	65†	30†	40†
148	128	65	98	83	30
115‡	154	50‡	116	65‡	38
155	120	85	94	70	26
122	126	60	75	62	51
145	118	75	74	70	44
145	170	88	100	57	70
134	146	78	84	56	62
148	190	85	90	63	100
140	170‡	98	55‡	42	115‡
120	125	70	85	50	40
110†	152	75†	80	35†	72
115	109†	80	76†	35	33†
130	160	80	95	50	65
150	160	100	90	50	70
192	138	95	68	97	70
150	144	65	82	85	62

*Two fatal cases.
† Five cases with low systolic (110 or below) but satisfactory diastolic pressure.
‡ Two cases in which there was low diastolic pressure (below 60), but in which operations were successfully performed because of good systolic pressure (above 110).

In fact, the more one studies the heart with respect to operation, the more one is impressed with the relative safety of operations in many hearts that are distinctly abnormal. Apparently there is no better criterion by which to judge the ability of the heart to withstand the strain of operation than a careful study of the history and physical examination in conjunction with precise methods of study. The patient who is able to be up and around with fair comfort is apt to stand operation well. The patient who has signs of a lack of cardiac reserve must be put to bed and treated until all symptoms of beginning decompensation have subsided.

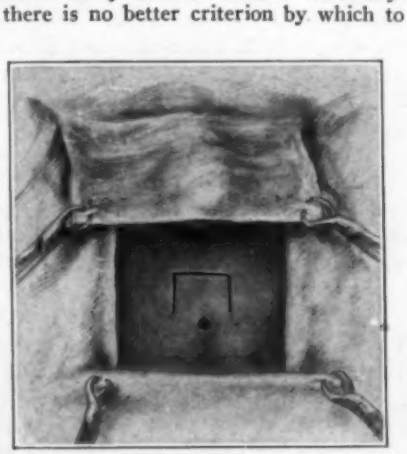

Fig. 20.—Rectangular perineal incision employed by the author.

One approaches operation in the selected cardiac patient today with much less foreboding than formerly because of the more skilful anesthesia in the average clinic.

For years I have digitalized these patients as a routine before and after operation, and thereby avoid in many cases drops in pulse pressure that not infrequently prove fatal in undigitalized patients who have been operated on. Not only will this practice save many lives, but it will surely prevent many postoperative complications and promote convalescence.

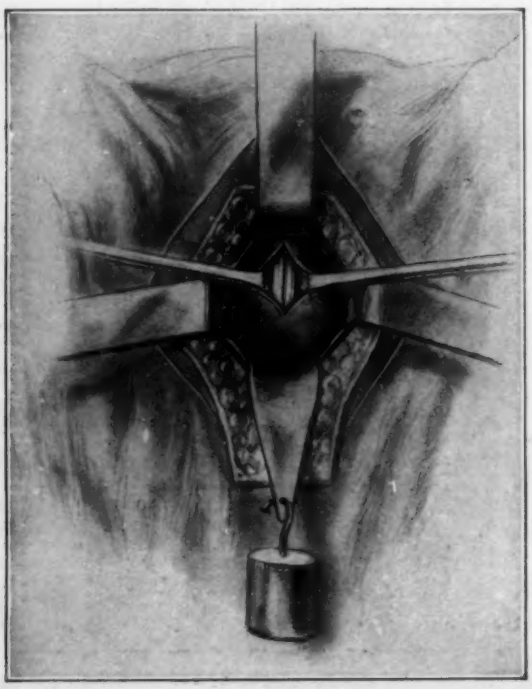

Fig. 21.—The urethra is incised for the introduction of the prostatic tractor above the triangular ligament on a grooved sound; this facilitates cutting the urethral walls at right angles, instead of obliquely; the self-retaining weighted retractor reduces the assistance otherwise necessary.

The pulmonary condition of the patient must not be overlooked, and when ether is the anesthetic of choice it comes into serious consideration.

The nervous system undoubtedly is a factor far more frequently than is commonly realized. We have had quite a number of patients with symptoms of prostatism, referred for prostatectomy, who by reason of lost or diminished knee jerks were classified as tabetics. Again, morbid fear of death to the point of distraction and panic may contraindicate operation. One of our patients was so terror stricken that he died of shock of purely nervous origin a few days after prostatectomy. On the day first set for his operation, he was so hysterical with fear that it had to be postponed.

Age, per se, is no contraindication to operation. Some men at 80 or 60 are younger than others at 50 or 40. When, however, it is associated with excessive arteriosclerosis, senility or natural organic exhaustion, it may preclude any thought of surgical intervention. The youngest in our series was aged 50, the eldest, 90; by decades, the fifth claimed twenty-two, the sixth fifty-two, the seventh twenty-seven, the eighth three and the ninth one.

DISCRIMINATION AS TO OPERATIVE ROUTE

After it has been determined that the patient is qualified for any form of surgical intervention, the second thought should be exact discrimination as to the proper route to be employed in the given case. Although rectal palpation and catheterization are important and indispensable aids in determining the presence or absence of atrophy of the prostate, a bar, perivesical, seminal vesicular or prostatic inflammatory infiltrate, the urethral length, residual urine, bladder capacity and tone of musculature, the most important instrument for demonstrating the character of the enlargement, the location of the obstruction, complicating calculi, tumors and diverticula is the cystoscope. By it those conditions of prostatisms sans prostate, which constitutes 10 per cent. of all patients suffering from prostatic symptoms, enlargement of Albarran's and Home's glands, median bar obstruction and other intravesical pathologic changes, can be definitely differentiated and a correct judgment formed as to the appropriate operation to be employed in the given case (Figs. 10 and 11). Preponderant enlargement of the gland in the direction of the bladder, whether of the median or lateral lobes or general, or when complicated by calculi, tumors or diverticula, call for suprapubic removal. The perineal route is restricted to small, inflammatory or fibrotic glands. The punch operation, invariably combined with suprapubic cystotomy, is reserved for fibrotic contractures of the vesical orifice or so-called median bar obstructions, including Albarran's glands. I regard the punch operation, however, without cystotomy, as a more dangerous procedure than formal prostatectomy itself, on account of hemorrhage and infection. Therefore, I have included it with the suprapubic operation in

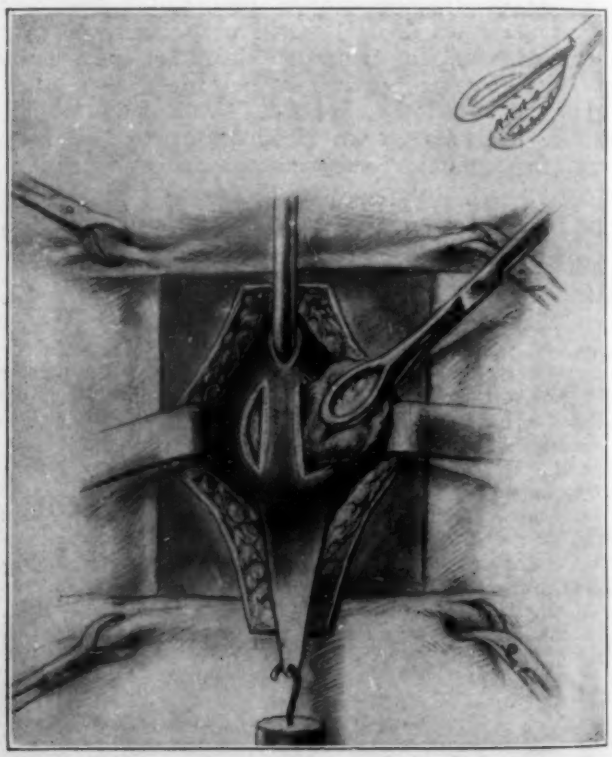

Fig. 22.—Special rat-toothed lobe forceps have been found most practical, especially in grasping small glands.

my cases; and when the use of the punch is indicated I employ it with rongeurs, believing thereby that I am able to do a more thorough and effective operation, at the same time being enabled to control any hemorrhage and provide for better bladder drainage in infected cases. Dependent on this discrimination, I have performed the suprapubic operation in 76.2 per cent. and the perineal in 23.8 per cent. of my cases. Those who

decry the routine utility of the cystoscope for this purpose know not whereof they speak, and are dangerous exponents of an otherwise honorable specialty.

PREOPERATIVE CARE

The third most important factor in the efficient management of the prostatic is the best preoperative care. The great question here is the drainage of the

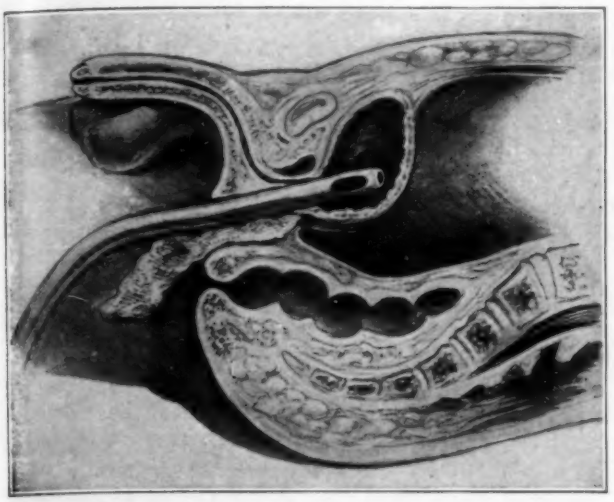

Fig. 23.—An ordinary eye in end and side rectal tube is easy of introduction through the urethra, and provides excellent drainage.

bladder, permitting decompression and readjustment of the kidneys, which have been sorely damaged by urinary back pressure. In the vast majority of cases this can be satisfactorily carried out by continuous catheterization, efficiently supervised. Primary cystotomy always has been and should be resorted to in a small minority of patients, as follows: those suffering from a badly infected bladder, those complicated by epididymitis, false passage, abnormally small urethra, impassable prostatic urethra, and those who cannot tolerate the retention catheter or in whom its drainage is unsatisfactory, or its presence is too painful. This has been the case in only 13 per cent. of my series. The decision between catheter and scalpel should never be difficult. The routine two stage prostatectomy is a mistake for economic if no other reason, and implies a lack of patience, ingenuity and diligence. Watchful waiting, forced water, urinary antiseptics to prevent ascending infection, also daily bladder irrigations and the employment of functional kidney tests, anticipating the arrival of the day safe for operation, are all of first magnitude importance. If the kidneys have been damaged, some diuretic, as potassium citrate or theophyllin sodio-acetate, caffein sodiobenzoate or spartein sulphate, or, if there is myocardial degeneration, small doses of digitalis to steady the heart and tide it over the strenuous days preceding, during and following operation will shorten convalescence and save life.

OPERATIVE TECHNIC AND MANNER OF ENUCLEATION

The operative technic and method of enucleation of the gland is probably of less importance than any of the three safety factors discussed above. I do not regard the choice of anesthetic as important a matter as is commonly believed; and when it has been definitely determined that the patient is a qualified surgical risk, he will tolerate nitrous oxid-oxygen, or nitrous oxid-oxygen-ether or plain ether, expertly administered, equally well. Gas poorly given is more harmful and unsatisfactory than ether. Rarely, morphin-scopolamin or spinal, parasacral or local infiltrational anesthesia should be employed. In this series, ether alone was the anesthetic in fifty-five patients, nitrous-oxid, oxygen and ether in thirty-seven, nitrous oxid alone in nine, scopolamin-morphin in three, and parasacral and local infiltration in one. Whether the prostatic obstruction is removed suprapubically, perineally or perurethrally, it matters little, so long as the most appropriate method, determined by careful investigation, is employed, and the enucleation is carried out (1) by following the proper lines of cleavage and (2) by preserving the external vesical sphincter, thereby avoiding (*a*) the plexus of Santorini and unwarranted hemorrhage and (*b*) incontinence of urine.

In the suprapubic route, the prostate is removed by the intra-urethral technic (Figs. 12 and 13). Excessive bleeding is controlled immediately by suture (Fig. 14) or occasionally by the pneumatic bag of Hagner or Pilcher (Fig. 15). I have never packed the prostatic bed, nor have I ever lost a patient from hemorrhage. Packing prevents the natural contraction of the prostatic capsule—the best hemostatic—and, secondarily, invites infection. The correct selection and placement of fenestrated drains for the bladder and space of Retzius is not unimportant (Figs. 16, 17 and 18). The closure of the bladder, rectus muscles, fascia and skin in tiers (Fig. 19) has the quadruple advantage of keeping the patient perfectly dry, of shortening healing of the wound and convalescence, of lessened liability to hernia, and of better cosmetic results. The technic employed for the perineal operation is essentially that followed by Young in his conservative perineal prostatectomy, using a rectangular, in preference to the acute angular, incision (Fig. 20). The most important precaution in the performance of the operation is to avoid severance of the fibers of the compressor urethrae muscle by incising the urethra above the triangular ligament, thereby obviating any danger of subsequent urinary incontinence. I prefer to do this on a grooved sound, as shown in Figure 21. Other less important features as I do the operation are the employment of a self-retaining weighted retractor, a special rat-toothed lobe forceps, the use of an ordinary eye in end and side rectal tube for bladder drainage, and paraffined gauze for packing the prostatic bed (Figs. 22, 23 and 24). Young's punch operation, when indicated, can be more effectively and safely performed when associated with a cystotomy, permitting pressure on the beak of the instrument (Fig. 25); also the use of rongeurs for the removal of tissue at the vesical orifice. The opened bladder also allows of absolute control of hemorrhage and better drainage in infected cases.

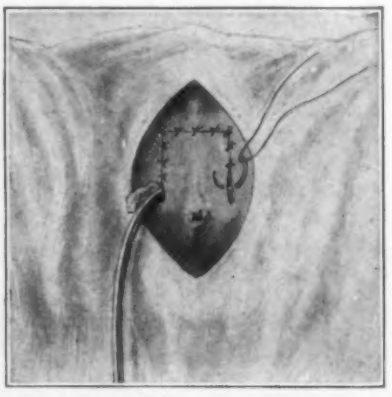

Fig. 24.—Closure of wound about drainage tube and paraffined gauze packing.

POSTOPERATIVE CARE

The fifth and not the least important factor in the conservation of life in prostatectomy is the postoperative care of the patient. Doubtless, the most important immediate postoperative consideration is the administration of half strength saline solution. In the perineal cases, 1 pint of this solution is given under each breast; in the suprapubic operation, it is administered by protoclysis and often kept up throughout the night. In some cases, from 3 to 5 per cent. glucose and soda solution will be preferable, and intravenous infusion will be required. To stress, feature and force the unhappy, decrepit old prostatic patient out of bed on the third day or too soon after his operation is barbarous and not infrequently fatal. To let him lie quietly on his back, in accordance with his own pleasure, is worse. It is obligatory that his position in bed be changed frequently, and he should be set up in bed as soon as possible. We never get these patients out of bed during the first week. The small drainage tube in Retzius' space is removed on the second day; the large bladder drainage tube and sutures are removed on the seventh day, when the special suprapubic cup drainage apparatus is applied (Fig. 26). The patient is usually gotten out of bed wearing a suspensory, from the eighth to the tenth day, at which time the drain into the bladder is discontinued, although the cup is retained until the suprapubic wound is practically closed. Many patients have infected bladders and disintegrating blood clots, and I find that the majority require daily total irrigations for some time. Most of the patients whom I have been called to see in consultation, because they were not doing satisfactorily, have been the victims of an ascending infection from a purulent cystitis. Although irrigation is responsible for the supervention of epididymitis in some cases, I feel that this a preferable complication to pyelonephritis. Forced water, the administration of some urinary antiseptic, and the cautious continuation of renal and cardiac stimulants are prerequisites for the best results.

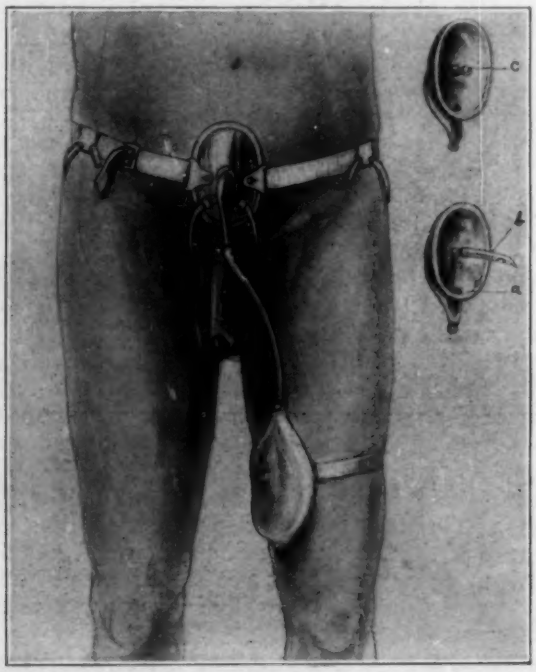

Fig. 26.—Author's suprapubic drainage cup apparatus applied to patient. The belt is easily detachable from the cup for sterilization; the cup has a double outlet, *a*, draining off any leakage occurring about the rubber bladder drain, *b*; the detachable metal connection *c* is removed when the bladder drain is discontinued.

RESULTS

The analysis of my series of 128 consecutive hospital admissions of patients with aggravated symptoms of prostatism, up to Jan. 1, 1923, reveals the fact that twenty-three cases were nonoperative, in which eleven patients failed to qualify for operation, three refused operation; two out of fourteen (14.3 per cent.) died following preliminary cystotomy, and seven out of ninety-one (7.7 per cent.) died in the course of routine preliminary continuous catheterization. Of the 105 cases in which operation was performed, 76.2 per cent. were done suprapubically and 23.8 per cent. fell to the perineal route. The following complications and sequelae were encountered: pneumonia, five; troublesome blood clots in the bladder, four; carcinoma of Home's glands, one; parotitis, two; rectal fistula, one; epididymitis, nine; calculi of bladder, six; calculi of prostate, one; syphilis, three; diverticula, four; hernia, two; atonic bladder and residual urine, three; closure of vesical orifice, one; secondary operation, two, both perineal; peritoneal tears, two, both two stage operations. The majority of patients have been rendered impotent. No patient has had incontinence of urine following his operation. Four patients died, one of pneumonia, one of senility, one of nervous shock and one of myocarditis—a mortality of 3.8 per cent.

CONCLUSIONS

The factors most responsible for the reduction of mortality and morbidity in prostatectomy are:

1. Determination of operability.
   - (*a*) Stability of kidney function.
   - (*b*) Status of cardiovascular system.
   - (*c*) Pulmonary condition.
   - (*d*) Nervous system.
   - (*e*) General organic condition.
2. Discrimination as to route.
   Cystoscopy versus rectal palpation and catheter examination.
3. Preliminary preparation.
   - (*a*) Bladder drainage and antisepsis.
   - (*b*) Continuous catheterization versus cystotomy.
   - (*c*) Kidney decompression and readjustment.
   - (*d*) Urinary antiseptics and cardiorenal stimulants.
4. Operative technic.
   - (*a*) Anesthetic.
   - (*b*) Suprapubic versus perineal method.
   - (*c*) The "punch" operation.
5. Postoperative care.
   - (*a*) Saline solution, soda or glucose infusions.
   - (*b*) Evil of forcing patient out of bed too soon.
   - (*c*) Maintenance of urinary antiseptics and cardiorenal stimulants.
   - (*d*) Efficient bladder drainage.
   - (*e*) Bladder irrigations and asepsis.

Cures and Curers.—No specific cure, remedy, vaccine, serum, drug, chemical or physical appliance has yet been found that will really cure tuberculosis without the aid of the essentials of rest, fresh air, good food and proper medical direction.—*J. Outdoor Life* **20**:416 (Nov.) 1923.

PERINEAL PROSTATECTOMY BY A MODIFIED TECHNIC*

JAMES R. DILLON, M.D.
SAN FRANCISCO

The attention of urologists and surgeons is constantly being called to the brilliant reports on the mortality record of perineal surgery, on both the prostate and seminal vesicles. My interest in perineal prostatectomy was stimulated by a series of seminal vesicle operations which always healed kindly and which also gave me wider experience in perineal anatomy.

For several years I endeavored to select my cases as best suited for the perineal or the suprapubic route, but for the last two and a half years I have adopted the perineal route as a routine. Recent reports by Young, Hinman, Geraghty, Crowell and Thompson on the *en masse* enucleation through the perineum prompted me to try their modifications in a small series of cases. The results were somewhat unsatisfactory, as to both healing and function. Having lost fear of damaging the anterior part of the prostatic urethra by *en masse* enucleations about eighteen months ago, I began to work on the modifications herein described, with the other published technics for comparison, independent of Dr. Cecil's [1] paper last year, in which were originally reported some of the principles I was using.

The operation is performed with the patient on "Young's board," the perineum being brought horizontal. The apex of the prostate is exposed by the usual technic of Young, with a sound in the urethra. Instead of incising the membranous urethra and using the short prostatic tractor, I introduce the long seminal vesicle tractor through the penile urethra, after removal of the sound, and the prostate is pulled up and pressed into the wound. With this tractor it is necessary to use caution to prevent the short arms from breaking into the prostatic urethra. The rectum is now stripped off, and the prostate and intact urethra are exposed.

Lateral incisions are made on each side of the tractor through the prostatic capsule only, instead of the usual bilateral incisions of Young, described as 1.5 cm. deep and leaving a bridge of tissue between them (Fig. 1). The right lateral lobe is then dissected off of the prostatic urethra, sharp pointed scissors being used to cut the fibromuscular septums of the stroma from the medial part of the capsule, and the prostatic ducts from the urethral mucous membrane, considerable care being exercised until one is well past the length of the floor of the prostatic urethra. The lobe is then freed from the capsule laterally from the incision, the blunt dissector and the finger being used, separating it back to the anterior commissure. It is grasped with forceps, pulled down, and the apex cut with scissors from the posterior layer of the triangular ligament and upper anterior portion of the prostatic urethral mucous membrane. Ordinarily, the right lobe is easily shelled out with the finger from this point of the operation as completely as in the suprapubic route, by cutting with the scissors through the anterior commissure from above downward to the anterior margin of the neck of the bladder.

The same procedure is then carried out with the left lobe, care being taken to protect the strip of posterior lobe attached to the floor of the urethra and containing the verumontanum and ejaculatory ducts. This is often made easier with very large prostates by packing the empty right capsule with gauze to brace the right side of the tractor while the left lobe is being removed. Frequently, the median lobe and left side of the anterior commissure are easily shelled out with the left lateral lobe, particularly if the apex and anterior part have been well separated from the upper part of the prostatic urethral membrane.

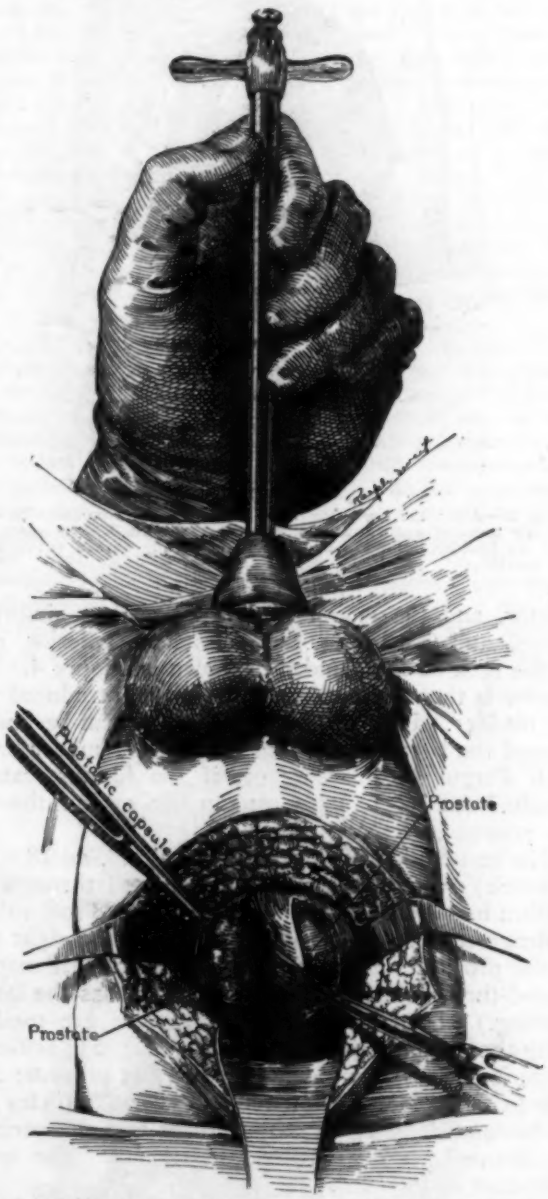

Fig. 1.—Usual exposure of prostate, held in view by long tractor; lateral incisions through prostatic capsule only; lateral lobe separated from urethral mucous membrane with sharp elevator, scissors or knife.

The index fingers are then introduced into each lateral cavity and the region of the anterior commissure, to palpate the prostatic urethra and bladder neck; any remaining prostatic tissue is removed with the Ferguson prostatectomy forceps (Fig. 3). The tractor is taken out, and as the anterior part of the prostatic urethra has been invariably torn or dissected out, the finger is introduced into the bladder and trigonal

* From the Urological Department, Stanford University Medical School.

* Read before the Section on Urology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Cecil, A. B.: A New Technic for Performing Perineal Prostatectomy, J. A. M. A. **79**: 1661 (Nov. 11) 1922.

regions palpated for subtrigonal or intravesical nodules, which can easily be removed by the Ferguson forceps.

In the fibrous ring types of hypertrophied prostate, the lateral incisions are carried down directly to the

Fig. 2.—After the apex has been cut from the triangular ligament and the anterior commissure is divided, the right lobe is enucleated from the bladder neck; the middle lobe is usually shelled out with the left lateral.

tractor, and the lateral lobes are freed as described above, and cut from the sides and anterior edge of the neck of the bladder as shown in Figure 4. The tractor is then removed and the finger introduced into the bladder. If a median bar exists, it can be pushed toward the lateral cavity and be removed suburethrally with Ferguson's forceps; or, if too fibrous, can be punched out by Young's median bar excisor through the prostatic urethra.

The enucleation having been completed, an 18 to 22 (French) soft rubber catheter is passed through the urethra into the bladder, and a size 26 to 28 soft rubber drainage tube in the perineum, through the right side of the prostatic urethra into the bladder. (It may be passed through the left side if that side has the larger opening.) Usually three catgut sutures are used to bring the prostatic capsule together (Fig. 5); sufficient gauze is packed between the rectum and prostatic capsule to control bleeding; the levator ani muscles are approximated by two catgut sutures and the perineal flap sutured with silkworm and dermol. The usual after-care is followed.

This operation has been performed on eighteen patients, fourteen of whom left the hospital in from eighteen to twenty-four days after operation. Of the other four cases, two were complicated by epididymitis, prolonging convalescence to thirty and thirty-five days; the remaining two patients were operated on at the County Hospital, and through inefficient postoperative care by orderlies were kept much longer. The wound and fistula were healed in thirteen days on dismissal from the hospital; three closed very soon after, while the foregoing two more complicated cases persisted for some time. Practically all the patients were sitting up on the third day and walking on the sixth or seventh. All but one were prepared by intermittent or continuous catheterization. The average age in this series was 73, four patients being over 80 and four in their seventies. Only two were sexually active before operation; since then, one has been impotent, and the other, aged 67, is still normal. The pathologic examination of the specimens taken in this group showed four to be malignant, but to date there has been no manifestation of growth or metastasis. I have not seen any trouble from folds or puckerings of the prostatic urethral membrane as spoken of by the *en masse* operators.

CONCLUSIONS

1. Perineal prostatectomy by whatever modification the operator is most skilled in may be done as a routine, offering the best drainage possible and the minimum operative risk.

2. By the method here described, as complete enucleation may be done as with the *en masse* technic, with preservation of both sphincters, verumontanum and ejaculatory ducts, though the operation takes a few minutes longer to do; there is a more certain prospect of rapid healing, closing of fistula, and good function.

3. It is followed by few complications, convalescence is shortened, and the patient is more comfortable.

516 Sutter Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. THOMAS AND DILLON

DR. HERMAN L. KRETSCHMER, Chicago: Dr. Thomas has been an ardent advocate for study of the renal function by his study of the "renal index," so called, and I think he has shown us the value of his method. I do not think that in

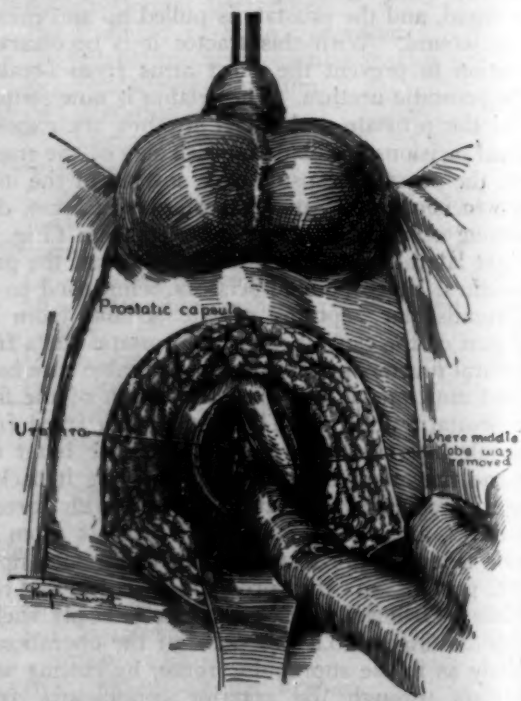

Fig. 3.—Empty prostatic capsule, urethral mucous membrane and intact bridge of capsule over posterior lobe and fibrous coverings of the ejaculatory ducts.

the final analysis it makes much difference whether functional study is done in that way or in some other; the important thing is the functional study of the cases. I believe, too, that the study of renal function is just one part; the patient must

be studied as a whole. It is important to take the eyes off the genito-urinary tract and look at the patient as a whole. He must have a careful physical examination, especial attention being paid to the heart, lungs and the many things regarding the vascular system. Important coexisting conditions, such

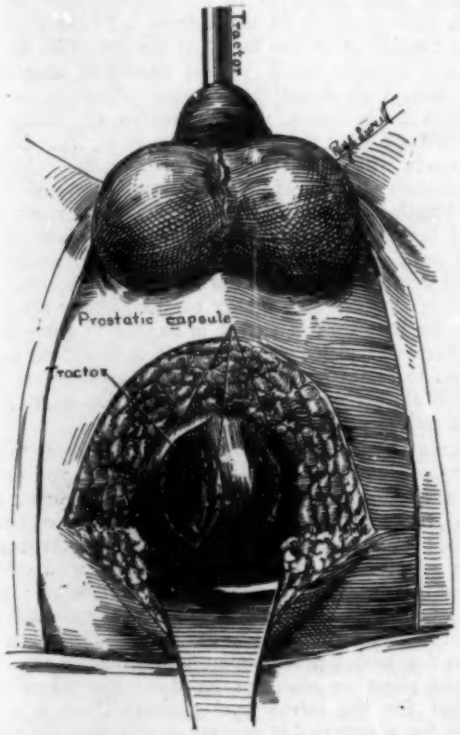

Fig. 4.—In small fibrous types of prostate, lateral incisions carried down to tractor as in Young and Hinman technic, except that bridge of tissue is left intact at external sphincter.

as diabetes, deserve a good deal of consideration. I should like to dwell for a few minutes on what constitutes operability. One cannot always do this from the laboratory tests alone. Sometimes, of course, we are obliged to operate in spite of the fact that the patient is a poor surgical risk. The good surgical risks do not interest us; the bad risks do. We should try to build them up and select out of that group the cases that are operable. There still remain a certain number of patients who are refused surgical treatment, but every once in a while such patients are operated on and do recover. For instance, in the large cities at the various charity hospitals where many of these patients are admitted in bad shape, the mortality is higher than in private practice, and still many of them can be put into shape for operation. As to the question of operative deaths, it seems to me that those patients who die before leaving the hospital are operative deaths. The route makes no difference at all. What we are trying to accomplish is removal of the obstruction. Dr. Thomas, in one case, did a suprapubic cystotomy and a punch operation in the median bar. I disagree with that plan. A much better way to treat median bars is by a very wide resection. I have always felt that it is better in those cases to do an open operation and a wide resection of the bar, rather than to do a transurethral operation.

Dr. Homer G. Hamer, Indianapolis: The subject of prostatectomy is ever an interesting one to the urologist as well as to the general surgeon. Preparatory treatment is far more important than the method of operation. Men in different localities say that they do not adhere to the indwelling catheter because patients do not tolerate it, and other men do adhere to that line of treatment. I wonder whether there is not something in the catheter itself that is responsible for this difference of opinion. We all know that there are patients with a small urethra that will not tolerate the indwelling catheter, and in those cases we must have drainage before subjecting them to prostatectomy; yet in some cases the catheter drainage is very successful. In some instances the patients come in from outlying districts and we find the solid end catheter being used and the patients complaining of irritation of the bladder; but the same patients, placed in the hospital with a very fine quality of soft catheter, such as the Eynard with the depressed eye, go on with drainage very comfortably. It is rather the exception for us to have trouble with catheter drainage preliminary to prostatectomy. I make use of the two stage operation a great deal. I deal with a class of patients who come in the terminal stage of the disease when the operative risk is great. I frequently place them on catheter drainage for a time and then do a suprapubic cystotomy, and after a week or ten days complete the prostatectomy. My methods are very much the same as those outlined by Dr. Thomas concerning kidney function and blood function, etc. In the after-treatment in the control of hemorrhage, I use the Hagner bag or gauze pack. For a time I was enthusiastic about the Hagner bag and I devised a wire apparatus to hold it in place, which contributed much to the patient's comfort. Of late years, however, I have used the gauze pack occasionally and find its removal is not difficult, for at the end of twenty-four hours it comes away very nicely without causing additional hemorrhage. After removal of the suprapubic drainage I make use of an indwelling catheter to keep the patient's bed dry. Our patients occasionally develop epididymitis, but I wonder whether they have it more than others do. I should like to hear whether patients treated without the indwelling catheter have less trouble than those treated in the way I have described.

Dr. C. E. Burford, St. Louis: My experience has been with the perineal route. I believe that it is the least formidable route for the patient who is very sick. It is less severe, does not shock the patient so much, and in the very ill, one can do a perineal operation successfully when a suprapubic operation might be fatal. On the other hand, I have had this experience: If the patient is at all able to go through with the suprapubic operation, my results have been much more satisfactory in the far run. I believe, taking all methods of examination, in the end we must depend on the finger to make out the real obstruction. I believe I have been able to remove the obstruction entirely by the suprapubic route when I could not do so completely by the perineal. I have never had to reoperate in one of the nonmalignant suprapubic cases. I have had to

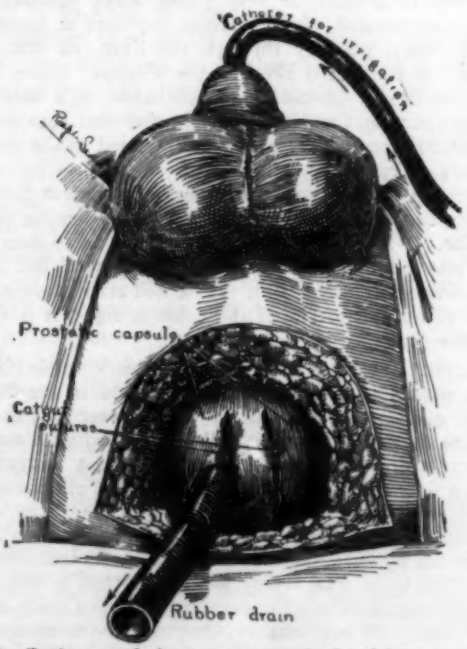

Fig. 5.—Drainage and closure; gauze pack placed between rectum and prostatic capsule; levator ani approximated.

reoperate in one of my own nonmalignant perineal cases and about six cases in which operation had been performed by other men.

Dr. Wirt B. Dakin, Los Angeles: If some one could get the general practitioner to inform his patients, or at least

encourage them, to come to the genito-urinary surgeon to have the work done before it is so late, much more could be accomplished. Surely, he knows that he should do this, but some practitioners, I imagine, do not like to give up the case for one reason or another. They fear the patient will die, and will not give him the chance for recovery that an operation might give. The public and the relatives also put fear into the patients by telling them the operation will not be successful. The question of age is another thing to deal with. Patients are often told that they are too old and that the operation cannot be successful. There are some things we all know we cannot do and a few things we are certain we can do. We are certain in this work, and it is discouraging, to say the least, to be told that one cannot succeed. When I was a first year intern, one of the first cases in which I assisted was a perineal fistula that had been operated on five or six times before. Our operation was unsuccessful. There was another case in the hospital at the same time that had been there for quite a while, a perineal case, that they had attempted to close two or three times before. I was East this year—it has been sixteen years since that internship, but one of those perineal patients is still on the floor wheeling carts around, and the wound is not closed yet. I congratulate Dr. Dillon on his simplified technic.

DR. WILLIAM E. STEVENS, San Francisco: One point Dr. Kretschmer touched on in his discussion is worthy of special emphasis, and that is that we should not place too much reliance on functional kidney tests. Because of retention, the kidney function is almost always diminished, but following drainage there is usually a marked improvement. I have had a number of patients with very low phenolsulphonephthalein output who made a good recovery following operation. Naturally, our statistics will be influenced unfavorably when operating on persons with partially destroyed kidneys; but statistics are of no importance compared to the welfare of the patient.

DR. ANDERS PETERSON, Los Angeles: I know that Dr. Thomas has been a great advocate of the indigocarmin test. Phenolsulphonephthalein has been used extensively and has also been found to be an excellent kidney test. Phenolsulphonephthalein is eliminated almost entirely by the kidneys, and if given to a baby or very young adults probably 100 per cent. is eliminated. Indigocarmin oxydizes in some manner in the body, possibly through the liver, so that about 40 per cent. is eliminated through the kidneys; hence I have felt that the use of phenolsulphonephthalein is a better test for kidney function than indigocarmin for that reason. The time of appearance and the amount eliminated in the first two hours gives a very important index of the ability of the kidney actually to filter. I have observed a patient for more than twenty-four hours and found the dye still coming through in the urine. I think that the final decision as to operability does not rest on the elimination of the dyestuff but on the general condition of the patient. If he will stand a suprapubic cystotomy for drainage and if the color is right, it is safe to take out the prostate.

DR. OLIVER LYONS, Denver: One remark made by Dr. Hamer in regard to urethral drainage should be emphasized. I am quite certain that the size of the catheter and the type has much to do with whether it will be retained with comfort. I feel a great deal like some of the other men in regard to deciding to operate in these cases on the dye elimination. I very much prefer to sum the situation up as Dr. Kretschmer and Dr. Stevens suggested, by the general examination of the patient and his general condition. I have on several occasions operated when there was a very low dye output before operation and this continued after operation, with very good results. Recently I have had two deaths. One was due to hemorrhage from an old duodenal ulcer of which the patient had not had any symptoms for a great many years, and hence was not recognized. The other case was recognized, or was suspected, and in all probability it was a malignant condition in the descending colon. The man could not catheterize himself. We moved the prostate. He lived for four weeks. Necropsy showed a complete stenosis of the descending colon, but no tissue was saved and I do not know what the lesion really was.

DR. JAMES STEINBERG, Los Angeles: I wish to call attention to the term "back pressure on the kidneys" as used in this paper. Too much attention is directed to the prostate as the main point of interest, with the natural supposition that the prostate, by being an obstacle to the easy passage of urine, dams back the urine in the bladder, and from there acts as a back pressure on the kidneys. I believe we should take into consideration the fact that the condition of the kidneys is not brought about by any damming back of urine, but that this is an initiative increased action on the part of the kidneys to overcome the obstruction and force out the same amount of urine through a narrower pipe. A comparison may be made with a water pump. If a pump is required to force a certain amount of water through a two inch pipe in a given length of time, the same pump must work twice as hard and fast to force the same amount of water through a one inch pipe, not because there is any back pressure on the pump, but because the pipe is narrower in the second instance. The reserve strength and energy of the kidneys are called on and used up to a certain extent in having to force the urine along a narrower urinary channel. It is therefore necessary, in addition to removing the obstruction, to direct our energies toward stimulating the initiative kidney action with drugs such as caffein sodiobenzoate at the same time.

DR. ALBERT E. GOLDSTEIN, Baltimore: It seems to me that cystoscopy when there is an infected bladder, and then operation in a few days, frequently produces epididymitis. This is one of the complications of the suprapubic operation but not often of the perineal. I believe that if the suprapubic operation is resorted to, we can do away with cystoscopy, except for diagnosis. It is done to determine principally whether any calculi are present. Cystoscopy should be done away with in badly infected bladder cases. There is a definite indication for both types of operation. Randall has certainly proved and given us statistics on these operations, and has shown that for the intravesical prostate there is a definite indication for a suprapubic operation, and that for the small, hard, fibrous and carcinomatous prostates, and also the intraurethral type, the perineal route is indicated. I believe that all prostates can be removed suprapubically, except the fibrous and carcinomatous; but not all prostates can be removed perineally. I do not believe we can get a large intravesical prostate through the perineal opening as well as through the suprapubic. There are definite indications for the two stage operation. If a patient whom one has been catheterizing to prepare for operation suddenly develops a form of sepsis, a pyelonephritis sets up, and if we let him go on, he will die. If we operate and do a two stage suprapubic operation we can unquestionably do a prostatectomy. Gardner has shown this conclusively, and gives good statistics on the suprapubic two stage operation. There are certainly two complications in the perineal operation that are never encountered in the suprapubic; one is incontinence of urine, and the other, fistulas.

DR. JAMES C. NEGLEY, Los Angeles: I do not believe that Dr. Thomas said anything about urethral drainage after a suprapubic operation, and I should like to know what he does in that regard.

DR. B. A. THOMAS, Philadelphia: I do not think we are likely to operate for statistics, but are inclined to operate on as many patients as we dare. We should be careful not to discredit surgery by operating in extreme cases, with a great likelihood of death. Patients will not accept the surgeon's advice because of the high mortality rate. I appreciate how Dr. Kretschmer feels about it. I have been tempted in many cases, one at least, with high blood pressure. I prophesied that he would die before the operation, and he did. Relative to ascribe deaths to cystotomy rather than to prostatectomy when a two stage operation is done, they should probably be ascribed to the prostatectomy; but if we do this, then we should ascribe the catheter drainage death cases to prostatectomy as well. In our series of 105 cases there were nine deaths, two from cystotomy in the preparation of patients for operation and seven from catheter drainage, causing an ascending infection, I suppose. Relative to the punch operation in conjunction with the suprapubic cystotomy, we try to do a very wide dissection, as Dr. Kretschmer said. In fact, we depend more on the ronguer than we do on the punch; but

sometimes we use the punch to get a line of cleavage. Anything that will be of assistance is necessary to start the procedure. We resort to the scalpel and never fail to make a very wide incision. I do not see why it is necessary ever to pack. Why not control by suture when the bladder is open? If it cannot be controlled in this way we can use the Hagner or Pilcher bag. Using a suture does not interfere with the action of the bladder. Packing invites infection, and has even resulted in death from peritonitis. As to reoperation, I am sure we are agreed that those cases that come to reoperation are those in which operation was done primarily by the perineal route. We have had to reoperate in one suprapubic case and two perineal cases. The suprapubic case was necessitated because, after removal of the prostate, the cut edges grew together, forming a diaphragm which completely prevented emptying of the bladder. The Hagner and Pilcher bag prevents such an occurrence as that, but it is very rare. I do not wish to convey the impression that I am adverse to the use of phenolsulphonephthalein in these cases. I agree that the dye can be used to better advantage for determining the kidney function because of the greater elimination, but I think this should not be anything against the value of indigocarmin. If we know the percentage of excretion, we can compute the normal in the majority of cases. Nor did I intend to convey the idea that the determination of the kidney function was the whole thing in determining the operability of these cases. I think I stressed the point that the blood and other general examination should also be used. As to back pressure on the kidneys, I am sure such a condition does exist. We can force fluid into the bladder and compress the bladder, but fluid cannot be pressed up the ureters. When the kidney and ureter have become diseased, it is possible to force fluids up and cause pressure on the kidneys. Otherwise, there would be no necessity for doing a cystotomy or carrying out drainage. I never used urethral drainage in any case. I have used suprapubic drainage. If there is any need for ironing out the urethra two or three weeks after operation, we may pass a sound.

DR. JAMES R. DILLON, San Francisco: I have done many punch operations, and I think that there is no other operation that gives as much satisfaction. The patients are relieved of their retention and are in the hospital only seven or eight days. The bleeding has given a little trouble, but the after-results have certainly well repaid the trouble they cause. Statistics are very important. Twenty years ago the mortality was 10 per cent. or more. Today a report by Dr. Young on more than a thousand cases shows an average of 3 per cent. What has brought this down? The stimulation of statistics to bring about preoperative care and examination. Another point is that we must not forget the internist. Recently, we had a case in which there was reported 15 per cent. of cardiac sufficiency. We put that patient under the care of the medical department, and within a few weeks he was brought up to a point at which we could perform a prostatectomy very satisfactorily. Without this treatment he would have been sent out as inoperable.

Pitfalls of Practice.—As I have been qualified now more than thirty years, I can look back on a period of varied practice sufficiently long to note incidents standing out so often that I may call them danger signals, the presence of which it is unsafe to ignore. The chief pitfalls in medicine are: 1. Neglect to make a thorough examination of every patient, and accepting as correct the statements made by the patient about what the other doctors said was the matter. 2. Concluding, when you find an incurable condition of which the patient is obviously ignorant, that you are the only man to have found this trouble. 3. Omitting to tell some responsible member of the patient's family when you discover a condition in which it is against the patient's interest that he or she should be told the truth. 4. Neglecting to share responsibility whenever possible in a serious illness, or undertaking operations which have looked so simple at the hands of an expert, but which may prove the reverse at the hands of the less experienced. 5. Refusing to meet the medical man asked for by the patient.—Bruce-Porter: Pitfalls of Medical Practice, *Practitioner*, **112**:13 (Jan.) 1924.

THE ICTERUS INDEX (A QUANTITATIVE ESTIMATION OF BILIRUBINEMIA)

AN AID IN DIAGNOSIS AND PROGNOSIS *

ALICE R. BERNHEIM, M.D.
NEW YORK

In 1847, Virchow observed in old, shed blood the presence of a substance, crystalline in form, much like bilirubin, which, like bilirubin, gave the Gmelin reaction. He called this substance hematoidin. Subsequent investigations (Jaffe, Hoppe-Seyler, Salkowsky, Eppinger) have shown the relationship between the pigments of the blood and the bile. Tarchanoff, in 1874, was the first to show, in dogs with bile fistulas, a rapid and marked increase in bile pigments in the bile after the intravenous injection of hemoglobin. Stadelmann,[1] and Brugsch and Yoshimoto,[2] repeated these experiments with similar results.

Since these observations were made, it has been the generally accepted opinion that hemoglobin is the mother substance of the biliary pigments. In 1917, Whipple and Hooper,[3] repeating these experiments, found that in bile fistula dogs the bile pigment output was generally, but not always, increased after intravenous injection of hemoglobin, but observed a far greater increase in pigment output when the usual meat diet of the dogs was changed to one of carbohydrates. They suggest, in the light of their observations, that pigment metabolism may not be the obviously simple mechanism it has been thought to be, but that substances other than hemoglobin may enter into the formation of the bile pigments. This may, of course, be so; but there is the possibility that the increase of bile pigments following the carbohydrate feedings is due to stimulation of a pigment reserve in the body which is thereby released.

Whatever may be the whole story of pigment metabolism, investigation up to the present time warrants the accepted opinion that, in the normal destruction of red blood cells within the body, hemoglobin is liberated, from which, through a process not fully understood as yet, bilirubin is formed as an end-product. Whether normally bilirubin is formed from hemoglobin, solely by the liver cells, or mainly by them, or by the reticuloendothelial system in general, including the Kupffer cells of the liver, or whether the liver, as stated by Brulé [4] and van den Bergh,[5] exercises not a secretory but an excretory function in regard to bilirubin, such as the kidney does in the case of urea, are interesting questions which further investigation may settle. A full discussion of the subject is given by Greppi.[6]

Independent of the answers to these problems is the fact that normally there exists in the blood serum a small quantity of bilirubin, constant under certain conditions for the same individual. (Urobilin is not a normal constituent of the blood serum. Conner and

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* From the First Medical Division of the New York Hospital and the Department of Medicine of the Cornell University Medical College.

1. Stadelmann, E.: Der Icterus, seine verschiedene Formen, Stuttgart, F. Enki, 1891.

2. Brugsch and Yoshimoto: Zur Frage der Gallenfarbstoffbildung aus Blut, Ztschr. f. exper. Path. u. Therap. Berl. **8**: 639-648, 1910-1911.

3. Whipple, G. H., and Hooper, C. W.: Hemoglobin Injection and Bile Pigment Output, Am. J. Physiol. **43**: 258, 275, 290 (May) 1917.

4. Brulé: Recherches récentes sur les ictères, Paris, Masson & Cie, 1920.

5. Van den Bergh and Snapper: Untersuchungen über den Icterus, Berl. klin. Wchnschr., 1915, No. 42.

6. Greppi, E.: Ricerche sperimentali sulla biligenesi, Sperimentale **75**: 485-530, 1921.

Roper [7] found it present only as an immediate antemortem phenomenon.)

Gilbert,[8] Lehndroff,[9] Steensma,[10] Conner and Roper and others have shown the presence of this normal bilirubinemia. Recently two new methods for the estimation of bilirubin in the blood (van den Bergh's [11] and Meulengracht's) have led to further investigations in this interesting field.

Meulengracht's [12] method as modified by Gram [13] and by Bernhard and Maue [14] is simple and accurate.

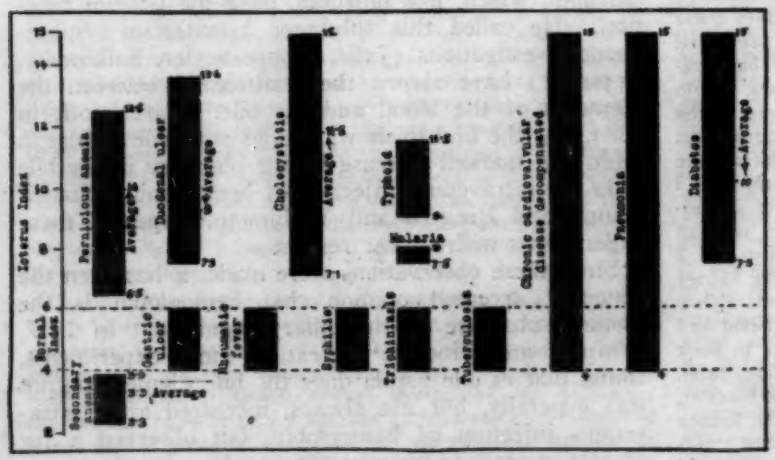

Chart 1.—Icterus index in various diseases.

It is one by means of which the depth of color of the serum may be expressed by a number. This number is known as the icterus index.

So far as is known, the yellow color of normal blood serum in the fasting person is due to bilirubin. The color of the serum is made deeper than normal by an increase in bilirubin. This occurs in (1) hemolytic processes in the body, such as pernicious anemia, hemolytic jaundice, hematoma, rupture of a viscus and malaria, and in (2) disturbances of the biliary system, such as cholangeitis, cholecystitis, cholelithiasis, adhesions about the gallbladder, and diseases of the liver.

In this investigation, a serum paler than normal has been observed in all cases of secondary anemia. As normal bilirubinemia depends on the normal destruction of red blood cells, it is conceivable that the pale serum in secondary anemia is due to the reduced number of red blood cells in this condition, with a consequent diminished amount of bilirubin.

The bilirubin content of the blood may be considerably increased above the normal before icterus is perceptible in the sclerae or the other tissues. Obviously, a test for the detection of this so-called latent jaundice is of considerable value, especially in those conditions in which the diagnosis is doubtful.

7. Conner, L. A., and Roper, J. C.: The Relations Existing Between Bilirubinemia, Urobilinuria and Urobilinemia, Arch. Int. Med. **2**: 532 (Jan). 1909.
8. Gilbert: Sur la pathogenie des ictères par hyperhémolise, Compt. rend. Soc. de biol., 1911.
9. Lehndorff: Ueber das vorkommen von Bilirubin und Urobilin im Blutserum und in serösen Flüssigkeiten des Menschen, Prag. med. Wchschr. **37**: 495, 1912.
10. Steensma: Ueber den Nachweis kleiner Menge Gallenfarbstoffes in Fäzes und Blut, Centralbl. f. d. ges. Physiol. u. Path. d. Stoffwechs. **3**: 231, 1908.
11. Van den Bergh, H.: La recherche de la bilirubine dans le plasma sanguin par la méthode de la réaction diazoique, Presse méd., 1921, No. 45.
12. Meulengracht, E.: Die klinische Bedeutung der Untersuchung auf Gallenfarbstoff in Blutserum, Deutsch. Arch. f. klin. Med. **132**: 285, 1920.
13. Gram, H. C.: Test for Pigment in Blood Plasma, Ugesk. f. Læger **82**: 1137 (Sept. 2) 1920.
14. Bernhard and Maue, cited by Stetten, DeWitt: The Surgical Value of the Estimation of the Bile Pigmentation (Icterus Index) of the Blood Serum, Ann. Surg. **76**: 191 (Aug.) 1922.

TECHNIC OF THE TEST

Three or four cubic centimeters of blood is withdrawn from a vein. The blood is allowed to clot and is then centrifugated. The supernatant serum is removed with a pipet and compared in a colorimeter with an arbitrary standard—a 1:10,000 potassium dichromate solution (0.05 gm. to 500 c.c. of distilled water). This solution is paler than normal serum. The Bock-Benedict colorimeter, which requires less serum than the Duboscq type, is the one that was used in these experiments. The standard solution is put into a 15 millimeter cell. The reading is taken at the point on the scale at which the serum and standard match. The standard number, 15, is then divided by the scale reading. The quotient is the icterus index. For example: If the scale reading is 3, the index is 5. If the color of the serum is too deep, it is necessary to dilute it with a 0.9 sodium chlorid solution. The quotient is then multiplied by the number of dilutions. For example: If the number of dilutions is 10, the index in the foregoing instance would be 50.

The deeper the color of the serum, the higher the index. The normal range in this series has been found to be between 4 and 6. The lowest index was 2.3, the highest, 150. *Clinical icterus has invariably been present when the index was above 15, and invariably absent when the index was below 15. The zone of latent jaundice may accordingly be said to lie between 6 and 16.*

In this series, the index has been estimated in 485 unselected cases. These have been listed according to their indexes. A study of these lists reveals some interesting relationships, which suggest that the test has a broader diagnostic application than was at first realized. In a number of normal persons including negroes, Chinese, Greeks, Italians and other dark-skinned people, the index was found to be within normal range (from 4 to 6), and when taken several times in the case of the same person it has proved to be constant for that individual, except when taken during the absorption periods of digestion, when the serum is cloudy and cannot be read with accuracy.

Cases in Which Icterus Index Was Normal

Disease	No. of Cases	Disease	No. of Cases
Rheumatic fever	12	Lobar pneumonia*	4
Chorea	2	Bronchopneumonia	2
Chronic nephritis	9	Thrombo-angiitis obliterans	2
Polycystic kidney	2	Uterine fibroids	3
Perirenal abscess	3	Gastric ulcer	12
Renal calculus	2	Trichiniasis	4
Pulmonary tuberculosis	34	Brain tumor	1
Pleurisy with effusion	10	Mediastinal tumor	2
Tuberculous meningitis	4	Myelogenous leukemia	3
Syphilis	23	Gonococcus arthritis	2
Lupus erythematosus acutus	1	Chronic cardiovalvular disease*	11
Exophthalmic goiter	5	Cystitis	2

*Higher indexes also occur.

The icterus index has been found to be normal in the 155 cases of twenty-four different conditions or diseases listed in the accompanying table.

Chart 1 shows the icterus index in a number of diseases.

THE ANEMIAS

In ten cases of pernicious anemia, the index ranged from 6.5 in one case (taken during a remission) to 12.5.

The average index was 10. In interesting contrast are the findings in thirty-three cases of severe secondary anemia in which the lowest index was 2.3, the highest 3.9, and the average 3.3. In no other condition in this series have such low figures been obtained. Among these were seven cases of carcinoma of the stomach. The anemia accompanying this condition has been thought by some to be due to hemolysis of the red blood cells produced by the toxins [15] of the disease. The low icterus index findings indicating a decrease in bilirubin show that this anemia is not of a hemolytic character.

The following two cases illustrate the value of the icterus index as an aid in the differential diagnosis between the so-called primary and secondary anemias:

CASE 1.—V., admitted to the hospital with a diagnosis of pernicious anemia, had the color, the blood picture and the symptoms of a patient with that disease. His icterus index, however, was below the normal, 3.3. It was therefore suspected that his anemia was not of a hemolytic (primary) character. Further investigation showed this case to be one of carcinoma of the stomach.

CASE 2.—M., who came into the hospital with a diagnosis of carcinoma of the stomach, had a marked anemia, a lemon-yellow tint, and symptoms of a gastric disturbance. This case proved to be one of pernicious anemia, and the icterus index, 10.7, was the first indication of the true condition.

DUODENAL AND GASTRIC ULCER

In sixteen cases of duodenal ulcer, the index was above normal, ranging from 7.5 to 13.6, with an average index of 9. In two cases, in both of which there was a marked anemia from hemorrhage, the index was 5.

Twelve cases of gastric ulcer showed normal figures.

Possibly the high index in duodenal ulcer may be accounted for by adhesions about the gallbladder, or an extending duodenitis involving the papilla of Vater with a cholangeitis.

GALLBLADDER DISEASE

The index is perhaps of greatest value in doubtful conditions of the right upper quadrant. The surgeon often has difficulty in determining whether disease is due to the gallbladder, the kidney or the appendix. In disease of the gallbladder in which there is no clinical jaundice, but which is sufficiently severe to produce symptoms, the blood will show an increase in bilirubin, owing to interference with the biliary system. A high icterus index, therefore, indicates involvement of the gallbladder, while in kidney disease and appendicitis the index is normal. However, accidental findings of gallstones in the gallbladder at necropsy give evidence that cholelithiasis may exist without noticeable disturbance of the biliary system. There is no reason in such cases to expect an icterus index above the normal

In thirty-one cases of proved cholelithiasis or cholecystitis in which there was no clinical jaundice, the presence of latent jaundice was shown by the indexes, which ranged from 7.1 in one case and 7.5 in three cases, to 15, with an average index of 11.5. In every case after operation and recovery the index returned to normal.

Two cases illustrate the delicacy of the test:

CASE 3.—J. A., a man, before operation, showed an index of 13.6. On operation, the gallbladder was found to be held down by adhesions. A cholecystostomy was performed. Recovery was normal, so that one week later the index was 4.5. A day or so later, however, drainage of bile became sluggish, but there was no jaundice. The index at this time was 7.5. On the establishment of free drainage, the index returned to 4.5.

CASE 4.—S. K., a woman with cholelithiasis, had an icterus index of 15 before operation (no clinical jaundice). Five days after the operation there was some interference with drainage, and the patient became slightly icteric. At this time the index went up to 19.7. A week later, although the icteric tint had not completely disappeared, the index returned to normal.

In a number of cases, the icterus index was the first definite indication of the disease.

CASE 5.—K., a man, was admitted to the hospital after an attack of severe epigastric pain. For fifteen years he had suffered off and on with constipation, gaseous eructations and occasional attacks similar to the one which brought him to the hospital. He had never been jaundiced. On admission his pain ceased, and he felt no discomfort. The icterus index was 13.5. Other findings were negative. Five days later he had another attack of pain, and at this time the sclerae were jaundiced. The icterus index was 20.4. On operation, a chronic cholecystitis and many gallstones were found.

CASE 6.—K. I., a man, admitted to the hospital with the diagnosis of cholecystitis, three weeks before had had severe sticking pains in the right upper quadrant, radiating to the back. The pain had persisted and was worse after eating. He had vomited several times. At the onset of the pain, his family thought he was jaundiced. He showed no jaundice while in the hospital. The temperature ranged between 101 and 102 F. The icterus index was normal. On the fifth day of his hospitalization, rigidity and tenderness developed in the right lumbar region, and on operation a perirenal abscess was disclosed.

CLINICAL JAUNDICE

The index is of value not only in the zone of latent jaundice, but also in cases of frank clinical jaundice in which it is not possible from day to day by observation alone to determine whether the jaundice is increasing or diminishing.

CASE 7.—P. came in to the hospital with severe epigastric pain, vomiting, icteric sclerae and skin, and a slight rise of temperature. His icterus index was 40. After twelve hours his pain and vomiting ceased. At this time his jaundice had apparently not diminished, but his icterus index had gone down to 20. With this indication of the clearing of an obstruction in the biliary tract, probably due to the passing of a gallstone, the surgeon was assured that an immediate operation was not necessary, and a more favorable time could be awaited.

MALARIA AND TYPHOID

The index was estimated in four cases of malaria and in four cases of typhoid. In the former the indexes were from 7.5 to 8; in the latter, from 9 to 11.5. In malaria, the high index is evidently due to the destruction of red blood cells by the parasites causing the disease. In typhoid fever, biliary obstruction is in all likelihood the causative factor, as typhoid bacilli in the bile and focal necroses in the liver are almost always to be found in this disease. The higher figures in typhoid are compatible with the findings in the other cases of this series; namely, that the average index is higher in cases of biliary disease than the average figure found in hemolytic conditions. In one of these cases the index was of especial interest:

CASE 8.—K., a man, aged 34, on admission to the hospital gave a history of malaise, loss of appetite and fever of five days' duration. He had not vomited, and he had no bowel disturbance. He had a temperature of 104, and shortly after admission he developed a wild, toxic delirium. The spleen

15. Hitzrot, J. M.: The Effect of Splenectomy on the Normal Individual and in Certain Pathological Conditions, Ann. Surg. **65**: 557 (May) 1918.

was enlarged and very firm. Encephalitis, typhoid and malaria were considered in the differential diagnosis. On the clinical manifestations a diagnosis of malaria with cerebral complications was made. The icterus index on admission was 11.5, a figure higher than any found in the cases of malaria. The Widal reaction was negative, and a twenty-four hour blood culture was sterile. A later one showed *Bacillus typhosus*. Necropsy revealed typical typhoid lesions.

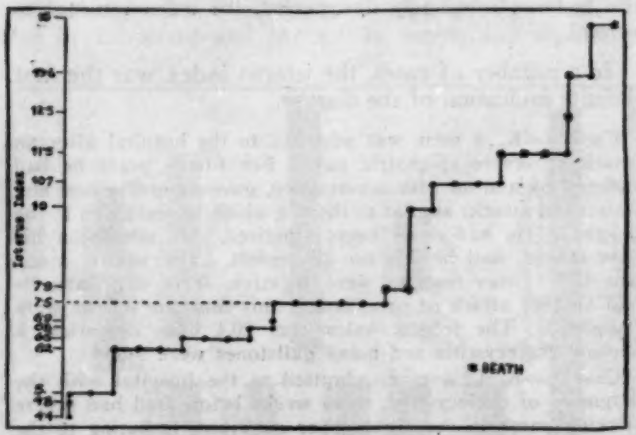

Chart 2.—Relation of the icterus index to the mortality in thirty-nine cases of pneumonia. In the twenty-two cases with indexes below 7.9 there were no deaths, whereas in the seventeen cases with indexes above 7.9 there were eight deaths, a mortality of 47 per cent.

TRICHINIASIS

In four cases of trichiniasis, the index was normal. In three of the cases a positive Widal reaction was obtained. In the beginning, with high temperature and only a slight eosinophilia, from 4 to 6 per cent. (which later, however, increased) and the positive Widal reaction, some doubt was cast on the diagnosis. Since a positive Widal reaction has at times been found in trichiniasis,[10] a normal icterus index would prove of help in ruling out typhoid, in which the index is high.

CARDIAC DISEASE

A subicteric color of the skin has been commonly observed in many cases of cardiac insufficiency, especially in those showing chronic passive congestion of the liver. This color is due to a hyperbilirubinemia, the measurement of which by means of the icterus index appears to be of some prognostic value.

In observations made in forty-one cases of myocardial and chronic cardiac valvular disease, the index varied directly with the degree of decompensation. In eleven cases giving normal indexes there were no signs of decompensation. With slight evidences of cardiac failure, the index ranged from 7 to 9, and in seven cases with indexes from 12.5 to 15, all but one ended fatally in from one to seven weeks.

PNEUMONIA

It is a general observation that the occurrence of frank jaundice in pneumonia is a sign of ill omen, and indicates a poor prognosis. The estimation of the icterus index in this disease shows that there are also prognostic indications in the zone of latent jaundice. There were cases in which from the clinical picture it was not possible to foretell whether recovery would occur or not. Among these, no case in which the index was 7.5 or below ended fatally. Death did not occur in every case giving an index higher than this, but all fatal cases showed higher figures. Two patients, both with an index of 7.9, died. However, of these, one case was complicated by a severe secondary anemia, which possibly accounted for the comparatively low index, while in the other case there was a valvular heart lesion with no signs of decompensation until sudden death, which was caused by cardiac failure.

The relationship between the index and the type of pneumonia was not evident in the thirty-nine cases examined, since in some cases the type was not determined. Commonly the mortality is highest in cases due to pneumococcus Type III; therefore it is likely that this group would show the highest figures. In this series there were four cases of pneumonia known to be due to pneumococcus Type III. Two of these which resulted in recovery showed low indexes (7.5 and 6.8), while the two giving high figures (12.5 and 15) ended fatally.

DIABETES MELLITUS

In thirty-two cases of diabetes mellitus, indexes ranged from 7.5 to 15. The explanation for the figures in this disease is not clear; but the results of a number of sugar tolerance tests performed on diabetic patients, compared with such tests performer on normal persons, indicate a close connection between the sugar and pigment metabolisms. Estimations of blood sugar and the icterus index were made while the subject was in the fasting state, and were repeated one-half hour, one hour, two hours and three hours after the ingestion of 1.5 gm. of glucose per kilogram of body weight. In the case of the diabetic patients, the index was found to be high in the fasting state, becoming lower with the rise in blood sugar, while the normal persons showed a normal index in the fasting state and higher indexes as the blood sugar rose. Further investigation in this matter may reveal some information of interest concerning the sugar and pigment mechanisms of the body.

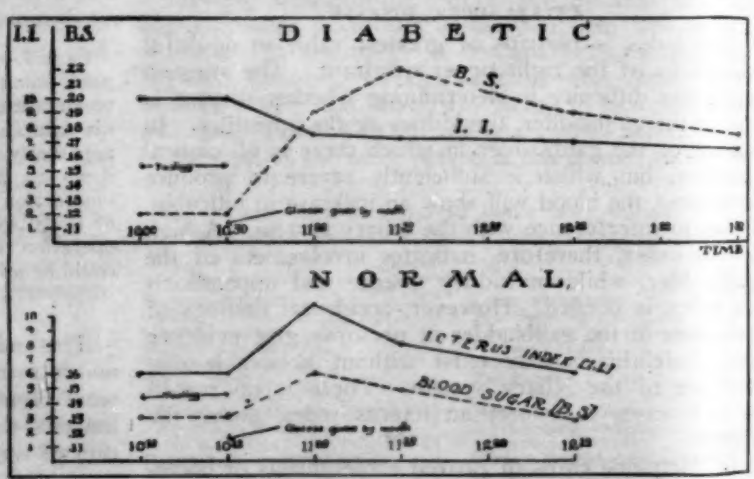

Chart 3.—Blood and icterus index findings in normal persons and in diabetic patients.

OTHER FINDINGS

In this series, the highest indexes obtained were in cases of occlusion of the common bile duct, in catarrhal jaundice and in carcinoma of the liver. The figures ranged from 30 to 150.

One case of subacute bacterial endocarditis with multiple infarctions gave an index of 15.

16. Mause and Zondek: Bemerkenswerte Befunde bei Trichinose, München. med. Wchnschr., July 24, 1917, p. 968.

Two cases of ectopic pregnancy with ruptured tubes and intraperitoneal hemorrhages each gave an index of 10.

Fractures of the pelvis, tibia and femur gave indexes between 9 and 11.

A large hematoma in the popliteal space gave an index of 10.

ERRORS IN THE PERFORMANCE OF THE TEST

In the performance of the test there are a few sources of error, which, however, may easily be controlled.

1. The standard solution becomes paler when exposed to light. In the dark it keeps indefinitely. By adding two drops of sulphuric acid to 500 c.c. of the potassium dichromate, the solution is said to be made stable.

2. It is essential that the serum be clear. Cloudy or lipemic serum gives false readings. Serum usually becomes opaque on standing longer than twenty-four hours, so that the readings should be taken within that period of time. Hemolyzed serum must be discarded. The slightest trace of hemolysis vitiates the result. It is therefore necessary that dry tubes and dry needles be used in withdrawing the blood. Also it is advisable to use for collecting the blood the same tube that is to go into the centrifuge, thereby avoiding the likelihood of hemolysis in transferring the blood from one tube to the other.

3. There are substances other than bilirubin which may deepen the color of the serum, and these must be taken into consideration. In infants, Hess and Myers [17] have shown that after the ingestion of eggs, oranges and chlorophyl-containing vegetables the yellow color of the serum is deeper than normal. Carotin and xanthophyll are the substances contained in these foods which produce this effect. This may hold true in the case of infants in whom the power of absorption of the intestinal mucosa is greater than in adults; but in a number of instances in adults, two hours after a breakfast containing two eggs and an orange, the indexes were normal. Carrots, however, do deepen the color of the serum. In the case of a man who had eaten approximately two carrots, the index was 15, two hours after the meal. Another man, after eating one carrot, showed an index of 10. On the following day the index of each of these men was 5.

It is conceivable that the power of absorbing coloring matter which may affect the color of the serum may differ in different individuals. Taking the index in the fasting state will obviously rule out the possible influence of such substances.

SUMMARY

1. There is a normal bilirubinemia. There may be a hyperbilirubinemia and a hypobilirubinemia.

2. Determination of the icterus index is an accurate estimation of the degree of bilirubinemia.

3. The icterus index as a measure of latent jaundice is an aid in diagnosis and prognosis in a number of diseases.

(*a*) It differentiates the hemolytic from the nonhemolytic anemias.

(*b*) It shows that the anemia due to carcinoma of the stomach is nonhemolytic in character.

(*c*) It has been found to be normal in cases of gastric ulcer, and high in cases of duodenal ulcer.

(*d*) In doubtful abdominal conditions, it is of value in indicating biliary obstruction.

(*e*) It shows whether jaundice is static, increasing or diminishing.

(*f*) It has been found to be high in malaria, but higher in typhoid fever.

(*g*) It is normal in trichiniasis, in which a positive Widal reaction is sometimes found. It is, accordingly, of aid in the differential diagnosis between this disease and typhoid fever.

(*h*) It is of prognostic value in cardiac disease.

(*i*) It is of some prognostic value in pneumonia.

4. The results of sugar tolerance tests performed on diabetic patients and normal persons suggest an interesting relationship between the sugar and pigment mechanisms, which seems worthy of further investigation.

5. Sources of error in the performance of the test are readily controlled.

17. Hess, A. F., and Myers, V. C.: Carotinemia, J. A. M. A. 73: 1743-1745 (Dec. 6) 1919.

ARCH SUPPORTS

THEIR ABUSE AND PROPER INDICATION *

ABRAHAM GOTTLIEB, M.D.
LOS ANGELES

The shoe salesman and the brace maker nowadays presume to be diagnosticians of foot ailments as well as dispensers of all sorts of supports and appliances for such ailments. After being "examined" and having the trouble "diagnosed," the foot sufferer is told that he requires a certain appliance to effect a cure. Without regard to the nature of the affection, static or inflammatory, traumatic or of circulatory disturbance, secondary to a remote focus of infection or to a constitutional disease, a stock or made to order contrivance is found indicated and is "dispensed." The ill effect on the public is self-evident.

To overcome this evil, it is essential that the physician should enter more fully into the foot complaints of his patients and not refer them to the shoe store or brace maker for relief. On their orthopedic judgment the physician should rely as little as he depends on the pharmacologic knowledge of the druggist.

The contour of the foot is the least consideration as an indication for arch supports, since we find low arches without any discomfort and high arches with flatfoot symptoms. Pain alone, produced from straining the ligaments, fasciae and joints of the foot, serves as the indication for a supporting device as a temporary measure, to be discontinued when pain ceases.

The foot support has a threefold object: (1) to relieve the tired and weakened leg and foot muscles from undue strain during the active part of the day; (2) to retain the arches in the position they are able to assume by voluntary muscular effort or by passive restoration and (3) to take the strain off the plantar fascia and the ligaments of the foot joints. These objects the support shares with any brace. As such it should be regarded. It should not be expected to restore or rebuild the arches. The only agents for this are the muscles, to which all attention should be directed that they may regain strength and function to perform their task.

The object of the support is fulfilled by a felt pad skived according to the individual need. A piece of heavy felt is shaped to conform to the contour of the foot: thick on the inside to fill the dome of the long

* Read before the Kaspar Kohn Hospital Staff, Jan. 7, 1924.

arch, gradually sloping off to a thin edge in front, back and on the outer side. In metatarsal arch depression and in Morton's toe, a cup-shaped piece of felt is made to fill the area below the second, third or fourth or that of the fourth metatarsal, respectively. The pads for the transverse and longitudinal arches may be combined by skiving out of one piece of felt a support that serves both regions. This felt pad is raised by gluing on it additional layers of thin felt, if in course of time the arches increase in height under the physical and mechanical treatment of the foot and leg.

Arch supports of metal, leather or any other unyielding material, provided they have been made from a mold of the foot, comply with the enumerated objects; but it must be admitted that any rigid foot support is harmful because it converts the elastic foot into a rigid system, is liable to cause periostitis, and prevents function of the plantar muscles.

A laced shoe with a flexible or semiflexible shank should be provided. It should fit snug enough to make the foot follow its movements, and should have a front sufficiently wide and long to permit spreading the toes and lengthening the forefoot in weight bearing.

The height of the heel must be chosen for each instance and must vary according to the ability of the patient to dorsiflex the foot. The high heel habit should be overcome only gradually; a sudden change to low heels causes stretching pain in the calf and thigh. The inner side of the heel, and in some cases the sole as well, should be raised by the insertion of a wedge, in order to tilt the boot and throw the body weight outward. The thickness of the wedge must be so adapted to the individual need that the corrected shoe plus the support will form a mechanical unit that allows the foot to rest on its normal points of stability; viz., the outer border, the heel and the heads of the metatarsal bones.

Reconstruction of the arches, regaining muscle strength and acquiring the habit of correct foot posture are accomplished by means of physiotherapy, exercises and instruction in correct standing and walking.

Physical measures are applied to all tender and painful feet in order to regain elasticity, reduce inflammation of joints and soft tissues and dissipate effusion. Exercises of the simplest kind should be taught. In addition to the classical ones, two may be added. They are of an active-resistive type:

1. To strengthen the supinators, the tibialis muscles, the patient places the outer border of the lower third of the leg on the opposite knee. He actively supinates the foot and resists this action with the palm of the hand against the first metatarsal. During this act the foot is held at right angles and the toes are flexed toward the planta.

2. To increase the power of the intrinsic foot muscles, the patient places the bared feet in a basin of hot water and grasps with the toes small pieces of rubber tubing that float on the surface. This active-resistive toe gripping is more effective than picking up marbles.

Most important is the formation of the habit of correct standing and walking. Both should be executed with the feet inverted or at least parallel, and should eventually lead to the acquisition of the upright position of muscular strength.

The patient must at all times be impressed with the fact that his cure depends most on his willingness to cooperate in the treatment, and to execute faithfully the prescribed rules of exercise and posture.

607 South Hill Street.

THE CASE AGAINST AXIS-TRACTION FORCEPS *

JOHN COOKE HIRST, M.D.
Chief Obstetrician, St. Agnes Hospital
PHILADELPHIA

The original indication for the use of axis-traction forceps, to secure engagement in the pelvic inlet of a floating head, is now almost universally and very properly condemned. The highest application now considered is when the head is wedged in but not through the superior strait. For at least 200 years it has been recognized that if the ordinary forceps were applied to a head high up in the pelvic canal and traction made in the ordinary way, a great deal of the force applied is lost against the symphysis and anterolateral pelvic walls. To obviate this, tapes or rods fastened into the fenestra of the forceps were used, to exert a downward traction, and force the head to move in the axis or direction of the pelvic canal.

MODELS IN COMMON USE

Of the multitude of instruments devised to attain this end of proper traction, three are in common use in this country, and a consideration of these three applies equally well to all other models:

1. The ordinary Simpson forceps, with the blades perforated on either side of the fenestra, for insertion of tapes. This is a sorry makeshift indeed. The handles must be lashed together to prevent separation of the blades; slipping is almost inevitable; the perforations weaken the blades to such an extent as to make their breaking by no means unlikely, and this model is mentioned only to be condemned.

2. The Tarnier, which is probably that in most common use, unfortunately. This instrument has a cephalic curve that is positively murderous; it has so many joints in the rods and blades that it is impossible intelligently to direct the force of traction; there is no means provided to prevent undue approximation of the blades, and the harder the pull, the greater the force of compression; the traction rods more often than not seriously injure the perineum, long before there is any impingement of the head on the pelvic floor; and the junction of the handle and traction rods is notoriously weak.

3. The Dewees, which is the most rational of the instruments, if any of them can be called rational. The blades are similar to those of the Simpson forceps, and the handle is a fixed one, acting on a fixed fulcrum, so that it is not possible, as in the other instruments, to exert traction in the wrong direction.

Both the Tarnier and Dewees instruments have the fault of all others, that the pull applied to the handles is multiplied at the blades, and it is impossible for the operator to estimate with any exactness the force he is really applying. This is always much greater than he thinks it is.

INDICATIONS GENERALLY ACCEPTED FOR THE USE OF AXIS-TRACTION FORCEPS

1. The floating head, loose above the superior strait. This is still countenanced by some writers, but, fortunately, generally condemned; and those who still commend it are growing fewer.

2. A head so nearly engaged that it seems that a moderate pull will secure engagement.

* From the obstetric service, St. Agnes Hospital.

3. A moderate contraction of the pelvis, of not less than 8.5 cm. anteroposteriorly at the brim in flat or 9 cm. in justominor pelves. It is often forgotten, however, that many of these pelves are funnel shaped, and that the difficulty is by no means over when the head is past the brim. Also that the joints of a justominor pelvis are notoriously weak and easily fractured by just the type of pull furnished by the axis-traction forceps.

4. The fact that dilatation of the cervix must be complete—a vital factor often overlooked or disregarded in practice.

5. Disproportionate size of the head to the inlet, when the pelvis measurements are normal. In this type, it must be definitely established that the disproportion is due to overgrowth only, and not to hydrocephalus. In considering these indications, we must not lose sight of several very pertinent facts. As soon as the forceps blades are applied, and traction begun, the flexion of the head is lost, and the lateral inclination much diminished. This results in larger diameters of the head coming into relation with the contracted inlet, with of course added difficulty. Owing to the excessive molding of the head, the forceps may not be applied at a high enough level to prevent slipping. It is almost impossible to direct the course of the head in accordance with the knowledge one has of the steps of normal mechanism, and one trusts almost entirely to a blind pull on the handles. De Lee describes these forceps as "inartistic"; "brutal" would be the better term, when one considers the all too common consequences.

METHODS OF APPLICATION

Methods of application fall into two classes:

1. Application transversely to the pelvis, without regard for the position of the head. One blade lies across the face and forehead, the other across the occiput. This is the worst possible application. It destroys the flexion of the head, and exerts a maximum of crushing force, in the direction in which the head is least equipped to tolerate it.

2. Oblique application, based on a knowledge of the position of the head and the steps of mechanism through which it has to pass. This is a more difficult procedure, but the one always to be followed if the instrument is to be used. The blades, when applied, lie across one malar bone and cheek, and behind the opposite ear. To secure this position one blade must be rotated, as in the ordinary forceps operation. The rule is that the blade is rotated which corresponds to the oblique diameter in which the head will lie, after it is past the superior strait, always assuming that the occiput moves anteriorly. To illustrate: In these cases, the head is always transverse at the inlet. Suppose we are dealing with a case in which the occiput is to the mother's left. When this head is in the pelvis, the occiput will rotate anteriorly. The head will then lie in the right oblique diameter (left occipito-anterior), and hence the right blade is the one rotated to secure the proper application. In this way the crushing force applied to the head, bad enough in any case, is less than in the transverse application.

The difficulties of proper application are considerable. The head is exceedingly flexed, lateral inclination is much increased, and the head is always molded down so that its real size is hidden. Traction is applied for a minute steadily and never by jerks; the blades are unlocked and the pressure is relieved; two or three minutes pass without traction; the blades are relocked, and traction is made again. If, after four or at the very most six traction efforts, there is no advance of the head, the operation must be discontinued. To refuse to confess that the method is then absolutely inapplicable and to continue traction for a longer period of time is absolutely indefensible and can only result in disaster.

In the models supplied with tapes or in the Tarnier, traction is made on the tapes or rods downward, to cause as wide a separation as possible between the rods and handles of the forceps. The perineum is protected as well as may be from injury by a Sims speculum. This is the only way in which traction can be applied to the head to make it move in the axis of the pelvic canal. To pull straight out, keeping the blade rods parallel and close to each other, wastes nearly all the force applied against the symphysis and defeats the very object desired. With the fixed handle of the Dewees instrument, it is not possible to pull in the wrong direction.

INJURIES TO THE MOTHER

A certain degree of injury is unavoidable, no matter what the skill and experience of the operator. Permanent signs of the operation always remain.

1. Grinding loose of the vaginal walls from their attachments to the pelvic muscles and puborectal fascia is constant. This is followed by varying degrees of cystocele, and prolapse of the uterus; and some degree of this always follows the use of axis-traction forceps. It may not develop for some time, years even, but eventually it will appear. This is, however, the least serious consequence of the method of delivery.

2. Laceration of the cervix of varying degree, depending on the amount of dilatation when the instrument was applied. If the cervix was completely dilated, it may escape injury altogether, but if not the tear may and often does extend into the vaginal vaults and bases of the broad ligaments.

3. Rupture of the lower uterine segment, usually anteriorly under the bladder. This is not an uncommon injury, if the cervix was not effaced and completely dilated.

4. Lacerations of the anterior vaginal wall, even into the bladder. Owing to the excessive molding and change in shape of the head, the edges of the blades often come in contact with the vaginal walls. These edges, blunt as they are, will cut the tense vaginal wall like a knife, and no one can predict how far the laceration will extend.

5. Extensive tears of the posterior vaginal wall and perineal body due partly to direct cutting of the blade edges, and, in the Tarnier instrument, the traction rods; or to the levator ani being torn off its attachment to the pubic ramus and exposing the whole lateral vaginal wall, into the ischiorectal fossa.

6. Lacerations of the perineal body through the sphincter ani and often for a considerable distance above it.

7. Fracture of the symphysis, sacro-iliac joints or even the ramus of the pubis. This is most likely to happen in the justominor pelvis, in which the joints are weaker than usual.

8. The most serious lacerations are the consequence of slipping of the forceps. No one who has not seen these injuries can form any idea of their frightful extent. I have seen, in one case, four parallel cuts in the anterior vaginal wall, involving the bladder and allowing the whole trigon to hang down into the vagina,

like a flap. Both ureters were cut. Another patient had the entire rectum, sphincter and all, dissected loose and hanging free, up to the level of the cervix. The axis-traction instrument is much more prone to slip than the Simpson, and to slip without warning. As the force applied is incomparably greater, the effects can easily be imagined.

INJURIES TO THE CHILD

1. Cuts on any part of the head, but most often on the forehead, face, ears and neck. These cuts are common in any case and much worse, of course, as the results of slipping of the forceps. They vary from moderate abrasions to deep gashes down to the bone, and not infrequently the complete severance of an ear.

2. Bell's palsy from pressure on the facial nerve. This is so common as to be almost expected. Fortunately, it is rarely permanent.

3. Intracranial hemorrhage, due to the crushing pressure the head has to endure. This is the reason for so many still-born children, and also convulsions and death in the first few days of life, after such a delivery.

4. Fracture of the skull, particularly the parietal and occipital bones.

5. Injuries to the orbital and palpebral nerves, causing ptosis of one or both eyelids, often permanent.

6. Injuries to the eyes, involving corneal edema and opacity of lens and hemorrhage into the anterior and posterior chambers, followed by serious sight impairment or complete blindness.

7. Complete exophthalmos, from pressure. The child is born with one eye forced completely out of its socket, with results to its sight that can be imagined.

8. Permanent mental deficiency or paralysis, secondary to nonfatal fracture of the skull or intracranial hemorrhage.

AFTER-EFFECTS TO THE MOTHER

1. Hemorrhage of varying degree, depending on the site and extent of the laceration. If the tear involves the vaginal vault and base of the broad ligament, the uterine artery may be torn and fatal bleeding result. The ischiorectal fossa is often the site of an enormous hematoma from injury of the pudic and rectal vessels.

2. Suppuration of hematoma, which may give rise to sepsis of a virulent type.

3. Puerperal sepsis originating in or extending to the endometrium, broad ligaments, paravesical space, ischiorectal fossa or perineum. As a result, extensive blood or lymphatic infection. It is conceded that the more handling of a patient in delivery, the greater the risk of sepsis. When one considers the traumatism, laceration, bruising of tissue and handling involved in an axis-traction delivery, the risk of serious infection becomes very real.

4. Various genital fistulas; rectovaginal, vesicovaginal or ureterovaginal, due to improper healing of attempted repairs, or when no repair has been attempted.

With the single exception of fracture of the ramus of the pubis, I myself have seen all the injuries described. I do not believe that a method of delivery capable of such consequences should be tolerated. If the use of the axis-traction forceps could be confined to a few test pulls, or, as Carl Braun said, the instrument could be used only as an "instrument of diagnosis," to see whether, under moderate traction, the head could be made to descend to the level of the ischiatic spines, there might be some justification for it. But the horrible consequences of too long persistence, in the hope that a few more pulls may bring the head down, or a disinclination to confess defeat, should put the axis-traction forceps with the obsolete sharp hook as an unjustifiable instrument of delivery.

ALTERNATIVE METHODS OF DELIVERY

In many cases, when proper pelvic measurements are taken and proper prenatal work and antepartum fetometry carried out, much or all difficulty can be avoided by timely induction of premature labor. If the measurements are too small to justify this procedure, an elective cesarean section one week before term is the obvious solution. When the patient is seen for the first time in labor, however, as is the rule in consultation practice, a different plan must be followed. First, a test labor of sufficient length to see what the patient will do for herself. It is surprising, as we all know, how the head will mold and enter the pelvis without aid, if sufficient time is given. If the head does not enter or descend the pelvic canal, spontaneously, to the level of the ischiatic spines, I feel very strongly that it should not be dragged down. In other words, ordinarily forceps of any kind are justifiable below the level of the ischiatic spines but not above it. High forceps have no place in obstetrics, in the light of our present facilities for surgical delivery. If the axis-traction forceps are applied and the head brought down easily, then they were unnecessary. The Simpson forceps properly applied, with the so-called axis-traction grip—one hand pushing the handles upward and pulling moderately outward, and the other hand making downward pressure at the lock of the handles, will exert all the force that is justifiable, and will bring the head down as well as the axis-traction instrument, with much greater safety to both mother and child. The modern Kieland forceps with their lack of pelvic curve and with a shifting lock, may prove superior to the Simpson forceps in this respect. As yet, in this country, we have had too scant experience with this instrument. If this degree of force is not sufficient to move the head, greater force should not be applied. In these cases, if the child is dead, craniotomy is the proper method of procedure. But, if the case has been to this point intelligently managed, the child will not be dead, and a low cervical cesarean section will secure its delivery with a maximum of safety to both mother and child. This is a much safer procedure than an axis-traction delivery requiring the usual amount of force. There is much less risk of sepsis, none of hemorrhage, and the child is never uselessly mutilated, and it does not prejudice in any way a normal delivery subsequently, provided the patient's measurements permit it.

1823 Pine Street.

Serodiagnosis of Leprosy.—The *Dermatologische Wochenschrift* of Oct. 20, 1923, contains a report by H. Muchow and D. M. Levy on serologic tests in which an extract of leprosy tissue gave a characteristic reaction when leper blood was added. The technic was that of C. Bruck; fresh leprosy nodules, instead of beef heart, were used, and the fluid was diluted with equal parts of alcohol and physiologic saline and set aside for eight days. A thick sediment formed on addition of 0.2 c.c. of the inactivated leprosy blood serum to 0.2 c.c. of this extract fluid. On centrifugation, the fluid kept clear in the syphilis cases and all others. They urge others to apply this test in the differential diagnosis of leprosy. The tests were made on four inmates of Unna's leprosarium.

THE TREATMENT OF VISCERAL SYPHILIS *

ALBERT KEIDEL, M.D.
AND
JAROLD E. KEMP, M.D.
BALTIMORE

The term visceral syphilis is generally employed as a pathologic notation covering a wide but not sharply defined anatomic field. In this discussion, it is used to designate syphilitic disease of any of the viscera of the thorax, abdomen, pelvis and scrotum.

The pathogenesis of syphilis in this particular field does not differ from that of the disease as a whole; the early general dissemination of *Spirochaeta pallida* involves these structures simultaneously with those in other parts of the body, but these tissue groups do appear to differ from others in the degree of susceptibility and reactivity to the invading organism. This assumption is based largely on the frequency with which visceral syphilis appears late in the course of the disease, and the extreme infrequency with which it becomes a clinical feature of early syphilis.

The existence of an exudative type of syphilitic inflammatory reaction in the viscera during the period of general secondary manifestations is hardly to be doubted, but it is usually not manifested clinically by grave functional or organic disorders at that time. Minor functional disturbances, such as slight albuminuria, mild gastro-intestinal disorders or cardiac arrhythmias, have been more or less frequently noted in the early stages of syphilis, and are observed to disappear as the result of treatment; but evaluation of their significance is not without conjecture.

Ordinarily, then, the treatment of visceral syphilis as an incident of secondary syphilis is included in the general management of syphilis at that time. Only rarely is it necessary to modify this treatment as the result of visceral complications. The rare precipitation of acute nephritis following the onset of treatment is familiar, as are cases of jaundice with or without evidences of acute hepatitis and diminished liver function. These may be the result of exacerbation by the drugs employed of existing mild lesions, and are to be met by appropriate modification of antisyphilitic treatment.

Since the arsphenamins and mercury depend on the liver and kidneys for their elimination, any reduction of the function of these organs has the effect of raising the toxicity of these drugs. Acute syphilitic nephritis or hepatitis, therefore, should be recognized in their early forms, in order to prevent possible drastic toxic effects from the precipitous institution of routine treatment for early syphilis. If involvement of these organs is recognized, small doses of the drugs should be given, and the interval between doses prolonged, until healing, as shown by approximately normal functional tests, has occurred, when treatment may be slowly and cautiously intensified. This, as well as what follows, indicates the necessity for a complete physical examination of every patient with early syphilis, who only too frequently escapes with a mere inspection of the cutaneous lesions.

Every one realizes the importance of adequately treating early syphilis. It is doubtful, however, whether every one appreciates equally the possibilities for preventive medicine which this early treatment offers. It is certain that almost all late forms of neurologic and visceral syphilis are preventable, and that their prevention is a relatively simple matter. If this thought can be so emphasized that every physician and every patient will think of early syphilis as potential neurologic or visceral syphilis from the very beginning, it will be obvious that the importance of early treatment does not lie only in the disappearance of skin and mucous membrane lesions, and reversal of a positive Wassermann reaction. Treatment would then be the treatment of visceral syphilis, of neurologic syphilis, at a time when these have already begun, and when they can be cured without mutilation. In a review of the effects of treatment of early syphilis now being carried on, we have been impressed by the absence of late visceral and neurologic syphilis in an adequately treated group, as compared with the incidence of these accidents in those patients who have been inadequately treated.

Visceral syphilis as a clinical feature of late or tertiary syphilis does not differ pathologically from the picture typical of that period. Participation of fixed cells results in localized areas of impaired nutrition, sclerotic processes, granulomas and degenerative changes. Under these conditions, recovery without more or less residual permanent damage cannot, as a rule, reward even the most thorough antisyphilitic treatment. The prognosis is further complicated in many instances by an associated intolerance for arsphenamin and mercury, dependent somewhat on the general physical status of the patient, but especially on the functional impairment of important viscera. The therapeutic problem is that of late syphilis made more difficult by these factors, and no hard and fast rules can be formulated for its solution. Relief of symptoms, improvement in the general physical condition, reversal of a positive Wassermann reaction, limitation of the disease process, and the establishment of so-called latency are possible accomplishments; but repair or replacement of destroyed areas and eradication of the infection are seldom, if ever, accomplished.

In a review of the considerations raised by this discussion, the records of 412 patients were examined. As many as possible of these patients were brought back to the clinic for physical and serologic survey in order to evaluate the efficacy of treatment after varying periods of time. Unfortunately, few of the records are sufficiently complete to be of value. Delinquencies in their attendance at the clinic with consequent irregular and lapsing treatment, together with omissions from the records of important data, render all but eighty-three of these records unavailable for present study. We realize that these cases are too few in number for statistical purposes, but we think they represent data of some value in estimating what can and what cannot be accomplished by treatment.

These cases are divided into two groups: one consisting of sixty-two patients with cardiovascular syphilis, and a group of various other visceral disorders containing twenty-one patients. Not all were treated, especially in the cardiovascular group, but for purposes of comparison it was thought well to include them. Treatment usually consisted of courses of from six to eight weekly injections of arsphenamin or neo-

* From the Syphilis Department of the Medical Clinic, Johns Hopkins Hospital.

* This investigation has been aided by a fund from the United States Interdepartmental Social Hygiene Board and the American Social Hygiene Association.

* Read before the joint meeting of the Section on Pharmacology and Therapeutics and the Section on Dermatology and Syphilology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

arsphenamin, alternating with from one to three months of mercury by inunction and potassium iodid by mouth. The term "course of treatment" is used to designate one such series of arsphenamin injections, followed by mercury and potassium iodid; and when a number of courses are given, it is to be understood that one course follows another without interruption, unless the treatment is described as irregular.

AORTITIS

We employ the term aortitis to designate a group of patients with fusiform dilatation of the aortic arch, demonstrable by physical signs or roentgenologic study, but without evidence of aneurysm, or of valvular or myocardial disease. The usual symptoms are substernal pain, often anginal in character, dyspnea and cough. In this subgroup fall thirty-six of the sixty-two patients with cardiovascular syphilis. Only those patients are included who have been followed for at least one year after the cessation of treatment. In the majority of instances, these patients have been under observation for from three to five years. In the accompanying table the results of treatment are briefly summarized. It is at once apparent that the success or failure of treatment depends on its prolonged and continuous

Results of Treatment in Syphilitic Aortitis (Uncomplicated)

Amount of Treatment	Number of Cases	Improved (Symptoms Relieved; No Progress in Disease)	Stationary (Condition No Worse than Before Treatment)	Worse (Increase in Symptoms or Physical Signs)	Dead
One year or more	10	10	—	—	—
From six to twelve months or very irregular	8	3	5	—	—
From one to six months	8	—	—	6	2
None	10	—	1	9	—

character. Ten patients are regarded as well treated; that is, they received an average of five courses of an arsphenamin plus mercury during an average period of two years. At an average interval of fourteen months after the cessation of treatment, one was found to be slightly improved, five moderately improved, and four markedly so. Eight patients received from one to three courses of treatment, usually irregularly spread over a year or more. Of these, three were slightly improved, and five were neither better nor worse. One or less than one course received by eight patients had failed to arrest the progress of the disease in any. Symptoms and physical signs had progressed, and myocarditis was later demonstrable in two. Two more patients so treated died six and fifteen months later. Comparing these results with the outcome in ten comparable untreated patients, all of whom became progressively worse during periods of from eight months to seven years, it is evident that the prognosis in uncomplicated aortitis is greatly improved by treatment. This improvement is in direct proportion to the amount, regularity and duration of the treatment.

ANEURYSM

The results in aortitis with aneurysmal dilatation, as might be expected, are not favorable. Nine treated cases, compared with three in which the patients received no treatment, indicate that the prognosis does not depend on antisyphilitic treatment alone, and that the untoward effects of drug therapy are more pronounced. Little if any influence on the size of the aneurysm is noted, although there is frequently symptomatic improvement. Hypertension may be relieved, as in one case in which the blood pressure dropped from 220 systolic and 100 diastolic to 110 systolic and 70 diastolic. Pressure symptoms in patients with large aneurysms are not much influenced. It is perhaps significant, and at least of interest, that three patients with large saccular aneurysms, in two instances thoracic and in the other of the abdominal aorta, have remained in a stationary condition, quite free from symptoms, for periods of five, seven and eight years, respectively. During these periods, treatment consisting of courses of small doses of neo-arsphenamin alternated with mercury has been practically continuous. On the other hand, a permanent negative Wassermann reaction, diminution in the size of the sac, and clinical improvement were noted in one of the untreated cases followed for three years.

The poorer prognosis, however, should not, of course, act as a deterrent from treatment. Longer courses of treatment should be given, and an attempt made to improve the patient's tolerance for arsphenamin, by rest in bed. Neo-arsphenamin is perhaps a safer drug, but should be given cautiously and in moderate doses at first. Relief of symptoms or arrest of progress, even without decrease in the size of the aneurysm, will make a notable gain. Without treatment, one may safely assume that the process is seldom arrested.

CARDIAC SYPHILIS

In the group of cardiac syphilis we have placed all patients with aortic insufficiency or with manifest myocardial disease. Of fourteen patients, four were too ill for ambulatory treatment, and did badly under medical care. Ten patients were treated in the clinic, three with arsphenamin, six with mercury and potassium iodid, and one with tryparsamid. Two of the patients treated with arsphenamin died, apparently directly as a result of treatment, one immediately after a third injection, and the other a few days after an injection. Both deaths were preceded by signs of cardiac failure. Severe reactions prompted discontinuance of arsphenamin in the third case. The reaction often following the administration of arsphenamin to these patients is most alarming. Actually during the injection there is sudden syncope, cyanosis with greenish pallor, and cold sweat. Respirations become slow, shallow and gasping. There is bradycardia, with lowering of the blood pressure, and small, often imperceptible, pulse. The suddenness of the onset and the rapidly increasing seriousness of the patient's condition are cause for grave alarm. The prompt intravenous administration of epinephrin in large doses is in our experience the best counter measure in the emergency. Recovery is usually prompt, if at all. The patient should as soon as possible be put to bed and kept at rest for several days or a week to obviate late collapse. The mechanism of the reaction is not completely understood, but is evidently associated with acute cardiac damage.

With mercury and potassium iodid as the only therapy, very little can be accomplished. Only one of the six patients so treated showed improvement symptomatically, but no change in physical signs. One is no worse after two and one-half years of treatment; one is worse after one year of treatment; two have become too ill to return to the clinic, and one has died. All patients in this subgroup remained seropositive.

RESULTS OF TREATMENT

Summarizing the results of treatment of cardiovascular syphilis, it is apparent that uncomplicated aortitis has the best prognosis. In this series, every patient who has been well treated (for a year or more) has done well. When aortitis is complicated by aneurysm, symptoms may often be relieved, and there is some evidence to indicate that occasionally the disease process may be arrested by sufficiently prolonged treatment. In general, however, the prognosis is poor. When cardiac involvement has advanced to the clinically recognizable stage, therapy is no longer an antisyphilitic problem, but one of general medical care. The ultimate outlook is always bad.

The treatment of other types of visceral syphilis presents few of the difficulties encountered in the cardiovascular group. When therapy is begun before extensive damage has been done, almost all these patients do well. In late forms, however, in which visceral mutilation is pronounced, antisyphilitic therapy succeeds only in producing anatomic scar formation, functional damage often remaining maximal. Because the number of cases in this group is so small, it is possible to discuss them only as a group. They consist of six cases of syphilis of the rectum, four of the liver, four of the testis, two each of the epididymis, stomach and mediastinum, and one of the kidneys. With the exception of hepatic and renal syphilis, actual therapy presents no difficulties so far as drug tolerance is concerned. Healing of lesions occurs without great delay, and unless there has been destruction or mutilation of sufficient degree to produce serious functional impairment, the patients all do well. The Wassermann reaction is almost invariably reversed to negative by three or more courses of treatment, although it is doubtful whether eradication of the infection is often accomplished. Here, as always in the treatment of syphilis, the problem may be solved by adequate, regular and sustained treatment. Two years of such treatment will generally succeed in bringing about a permanent condition of latency.

For some of the mutilated cases, such as rectal stricture, surgery often can effect relief from the mechanical obstruction. Pyloric and gastric scarring, with obstruction, become problems for gastro-enterologist and surgeon, with no great hope of benefit.

Renal and hepatic patients must be treated cautiously until their capacity for tolerating drugs has been established. One patient with syphilitic nephritis exhibited marked intolerance, developing an acute renal flare-up simultaneously with postarsphenamin dermatitis. Later on, when the nephropathy had improved, the functional tests became approximately normal, hypertension was greatly reduced, and tolerance for arsphenamin was restored. The liver has the ability to replace destroyed parenchyma, but this hyperplasia is not rapid, and treatment must be sufficiently mild to allow time for anatomic and functional restoration.

Whole-Time County Health Officer.—The whole-time county health officer fills in the gap between the state authorities and the county. He is the connecting link. He is constantly in touch with local affairs. He knows the local authorities and local needs. General principles are necessary, but each community has to have special modifications of these general principles. It is the health officer's duty to apply these principles to the best advantage, always bearing in mind the local conditions.—Chichester, P. M.: *Virginia M. Monthly* **50**:468 (Oct.) 1923.

THE ETIOLOGY OF SCARLET FEVER*

GEORGE F. DICK, M.D.
AND
GLADYS HENRY DICK, M.D.
CHICAGO

Owing to the constancy with which hemolytic streptococci of one kind or another have been found associated with scarlet fever, they have long been considered as a possible cause of the disease. Attempts to prove their causal relation have encountered many obstacles, chief of which has been the failure to produce experimental scarlet fever.

TYPES OF STREPTOCOCCI

The hemolytic streptococci associated with scarlet fever do not all show the same cultural characteristics. They may be divided into two groups according to their effect on mannite. In a series of 100 cases studied in 1922 and 1923, hemolytic streptococci were found in all; 16 per cent. of these strains fermented mannite, and 84 per cent. did not ferment mannite.

In 1923, we[1] reported experimental scarlet fever produced with one of the strains that fermented mannite. This strain was isolated from a case of scarlet fever. It produced experimental scarlet fever. It was isolated from the experimental disease, and again grown in pure culture. All of Koch's laws were thus fulfilled except that one which requires that the organism be constantly present in the disease. In order to meet this requirement, it was necessary to learn whether or not experimental scarlet fever could be produced with a strain of hemolytic streptococcus that did not ferment mannite.

INOCULATION OF SCARLET FEVER

Two volunteers were chosen. One showed an entirely negative skin test with the filtrate of the streptococcus previously used.[2] The other showed a positive skin test. A hemolytic streptococcus that did not ferment mannite was isolated from the throat of a scarlet fever patient. Part of a forty-eight hour culture of this organism was swabbed on the tonsils of each volunteer.

The volunteer who showed a negative skin test remained well. She had no sore throat, no fever and no rash. The volunteer who showed a positive skin test developed scarlet fever.

This was a woman, aged 22. Thirty-four hours after inoculation, she complained of generalized aching. At the end of forty-one hours, her temperature by mouth was 100.4 F. She felt nauseated and vomited twice; forty-six hours after inoculation, a faint scarlatinal rash appeared. The temperature, at this time, had reached 102. During the day, the rash became more marked. By evening, it had become intense, and the temperature had risen to 102.8. The leukocyte count was 22,400, with 91 per cent. polymorphonuclear leukocytes. The next day, the rash was still marked. The highest temperature was 101.2. On the morning of the fifth day of the disease, the temperature was normal. The rash was still present. At the time of the highest temperature, the urine showed a trace of albumin. During convalescence, it was normal. Recovery was uneventful. On the twentieth day of the disease, there

* From the John McCormick Institute for Infectious Diseases.

1. Dick, G. F., and Dick, Gladys H.: Experimental Scarlet Fever, J. A. M. A. **81**: 1166 (Oct. 6) 1923.

2. Dick, G. F., and Dick, Gladys H.: A Skin Test for Susceptibility to Scarlet Fever, this issue, p. 265.

was a typical desquamation on the hands, and beginning desquamation on the feet.

CONCLUSION

Since the streptococci used in these experiments have fulfilled all the requirements of Koch's laws, it may be concluded that they cause scarlet fever.

Clinical Notes, Suggestions, and New Instruments

A UNIQUE SYMPTOM OBSERVED BUT ONCE IN SEVEN HUNDRED AND SIXTY CASES OF MAJOR TRIGEMINAL NEURALGIA

Charles H. Frazier, M.D., Philadelphia

Major trigeminal neuralgia, often called tic douloureux, usually can be distinguished without difficulty from other forms of neuralgia. The mere recounting of the tale of woe by the patient is sufficient; often no questions need be asked by the examiner. The disease is constant in its expression if in nothing else. In my clinic or office I have the records of 760 cases, and in but one of these have I any account of the symptom here described.

The patient was brought to my clinic at the University Hospital by Dr. J. M. Beffel of Milwaukee. Dr. Beffel told me he had noticed that *while asleep* the patient grabbed his cheek, as he was wont to do during the paroxysms when he was awake. Not only did he clutch his cheek, but there was a spasm of the facial muscles often seen in the paroxysms. He was under observation for several nights before the operation, and what Dr. Beffel described was frequently repeated and recorded by the night nurse.

To draw any conclusions from one case in 760 is not permissible. It is simply recorded as a freak phenomenon. Perhaps some one with a more constructive mind may be able to find an explanation. One of the characteristic features of major trigeminal neuralgia is freedom from pain at night, and when a patient tells me her pain is worse at night it is almost a foregone conclusion that she has not the major type of neuralgia.

After the operation—avulsion of the sensory root—this unique symptom, as might have been anticipated, vanished.

3600 Walnut Street.

AN UNUSUAL CASE OF PERFORATED DUODENAL ULCER

Harry L. Schurmeier, M.D., Santa Barbara, Calif.

The unusual features of this case were the type and radiation of pain, the lack of abdominal symptoms, the chronicity of the pain, and the rarity of a right-sided subphrenic abscess as a result of a pathologic condition of the stomach.

REPORT OF CASE

A man, aged 48, married, a watchmaker, suddenly experienced excruciating pain in the anterior portion of the right shoulder and arm, May 19, 1923. Examination showed a somewhat tender abdomen, which it was difficult to palpate, as he held himself rigid owing to the intensity of pain in the shoulder. He was sent to the hospital and a study of the case instituted, but he returned home in spite of recommendations to the contrary. He was up and about for four or five days, during which time his chief complaint was of intense pain in the anterior portion of the right shoulder and arm. I did not see him again until July 17.

It was stated by the family that during the two months the patient's condition became progressively worse, he had a high temperature, and there was continuous pain in the right shoulder. The abdomen was also extremely tender. He was treated symptomatically during this period. The observations of the attending physician left him in doubt as to the diagnosis.

July 17, when I was again called, the patient was much emaciated, and looked extremely weak and anemic; his appearance was that of a patient late in typhoid under the old regimen of nonfeeding. His temperature at this time was between 102 and 103; pain in the shoulder still persisted, with abdominal tenderness and occasional nausea. He was intensely weak and at times irrational.

July 21, five days later, he for the first time vomited blood. His condition was so serious that I did not feel that he could live, and the family at last consented to his being sent to the hospital again. At this time the physical examination was negative, except for what appeared to be a systolic murmur at the apex, which was probably hemic in type. The abdomen was still tender, and some rigidity was present.

The blood examination at this time showed hemoglobin, 30 per cent.; red blood corpuscles, 1,570,000; color index, 1; small lymphocytes, 3 per cent.; large lymphocytes, 80 per cent.; basophils, 2. The stool showed the presence of microscopic and macroscopic blood. When the patient entered the hospital I placed him on the treatment for ulcer employed by Sippy, and also applied the flaxseed and bran poultice as advocated by Leube. There was no more vomiting of blood, although small amounts had been found in the stool.

The blood was found to be of Type 3, and a transfusion of 500 c.c. of blood was given by the citrate method. He became stronger, reacting well to the transfusion, and on July 31, the hemoglobin was 39 per cent.; red blood corpuscles, 2,650,000; leukocytes, 16,500.

August 9, on duplicating our previous examination of the chest, we first noticed a dulness in the midaxillary line on the right side, which extended up as high as the fourth rib. Aspiration of the seventh interspace, midaxillary line, produced 3 ounces of green, foul-smelling pus, containing short chain streptococci and colon bacilli. Percussion following this aspiration showed a decrease in the area of dulness, but on the following day the dulness had returned to the original contours, so that it was felt that resection of the rib was necessary.

I resected 2 inches of the seventh rib in the midaxillary line, under local anesthesia, and on incising into the parietal pleura, evacuated a large amount of foul-smelling pus. The patient was returned to bed and drainage perpetuated by posture. At this time there was considerable pain at the site of the wound, but the persistent pain in front of the right shoulder had mysteriously disappeared, this disappearance being concomitant with the evacuation of pus at the time of operation.

The stool at this time was free from blood; the hemoglobin was now 47 per cent. and the red blood count, 2,920,000.

August 14, the day following, the temperature was normal for the first time in six weeks. A great deal of pus drained out during the first twenty-four hours.

August 15, the Sippy powders[1] appeared in the drainage, establishing the fact that there was continuity between the upper gastro-intestinal tract and the right pleura. Methylene blue, 5 grains, was given by mouth, and four hours later appeared in the wound. On this date no barium could be seen passing into the region of the drainage tube at the time of the bismuth meal or up to one and a half hours later. A six hour film showed the stomach empty and a strip of barium in the region of the drainage tube, which curved downward and inward from the tube high up under the liver almost to the diaphragmatic dome. From this region traces of barium could be distinguished extending down in the direction of the duodenum.

The patient from now on began to improve rapidly, gaining weight, spirits and strength.

August 24, 5 grains of methylene blue was again given by mouth, with no return from the wound. At this time the discharge was much less profuse. The hemoglobin was 51 per cent., red blood count, 3,325,000 and the leukocytes, 14,000.

The patient continued to improve rapidly, being able to get out of bed, September 12, and was able to leave the hospital, September 19, still very weak, but enjoying his food, having a normal temperature, and gaining in weight and strength. He has never had any return of pain or discomfort in the shoulder

1. These consist of heavy magnesium oxid, 10 grains (0.65 gm.), and sodium bicarbonate, 10 grains (0.65 gm.), given alternately at half-hour intervals with powder containing calcium carbonate, 10 grains (0.65 gm.), and sodium bicarbonate, 30 grains (2 gm.).

or abdomen. Examination of the chest shows nothing abnormal, either on auscultation or on percussion.

COMMENT

It would appear from the foregoing facts that the pathologic condition present was a slowly perforating duodenal or pyloric ulcer, with a subacute perigastritis, multiple adhesions and suppuration in the subphrenic space, which was followed at a later date by rupture into the right pleural cavity. The adhesions were dense enough to wall off the process from the free peritoneal cavity, explaining the atypical and obscure symptomatology.

It is interesting to note that the chief and most constant symptom was pain in the anterior portion of the right shoulder and arm; also that there was entire absence of anything referable to the gastro-intestinal tract, such as abdominal pain, nausea and vomiting.

The pain in the shoulder, I believe, was attributable to the phrenic nerve radiation from pressure on the diaphragm.

The patient at present has resumed his occupation, and is gaining in weight and strength.

200 San Marcos Building.

KNOTTING OF DUODENAL TUBE DURING BILIARY DRAINAGE

RUSSELL S. BOLES, M.D., Philadelphia

Mrs. M. N., aged 48, complained for one year of attacks of pain in the upper right abdomen. The pain was very severe, of a colicky nature, and extended across the upper abdomen and to the back. It usually came on during the night and bore no relation to eating or posture. She felt distended after eating, and usually brought up considerable gas. She had always been constipated, but more so for the past six months, and suffered frequently with indigestion and "bilious spells." Following one severe attack of pain three months before I saw her, she stated that the stools were very light, but jaundice was not perceptible. The physical examination was negative, except for marked tenderness over the gallbladder.

June 23, 1923, the gallbladder was drained according to the Meltzer-Lyons method. Within ten minutes after the injection of the magnesium sulphate, bile began to flow, and 6 ounces was collected during two hours. When we began to withdraw the tube, it was noticed that unusual manipulation and tugging was required, and repeated efforts had to be made to remove the distal end from the pharynx. On its removal, it was observed that the distal end of the tube had been tied in a knot some time after it had been swallowed by the patient and supposedly determined to be in place in the duodenum. A new Rehfuss tube was used, which was free of any defects. During the entire operation the patient did not complain of any unusual discomfort.

1711 Spruce Street.

AN UNUSUAL CYST

PAUL E. N. GREELEY, M.D., WATERMAN, ILL.

Mrs. W. S., aged about 46, of Arapahoe, Neb., mother of a boy of 16, entered the hospital, Aug. 21, 1923. Her general health had always been good, with regular menstruations, until two years previous, when menstruation ceased. Her face was pinched, her skin flabby and cold. Her whole condition seemed subnormal. About fifteen years ago she first noticed an increase in the size of the abdomen and felt that she had a "tumor"; but as two sisters had had tumors and had died following operation, she had refused any operative procedure until she made her visit to Illinois. During these years her weight had increased from 100 to 176½ pounds (from 45 to 80 kg.), the weight at the time of her appearance. A diagnosis was made of tubal or ovarian cyst. The tumor was so large that it reached nearly to her knees. Walking was difficult, owing to the posture she had to assume to effect a balance.

Before the abdomen was opened, some of the fluid was removed by tapping. August 22, 23, 24 and 25, there were removed, respectively, 16¾, 17, 22¾ and 18½ pounds of fluid, a total of 75 pounds (34 kg.). The relief from pressure was pronounced; the edema left the legs, and the skin became less blue, and was warmer. On the 26th, the patient was allowed to rest.

August 28, Dr. Frank Wieland, assisted by Dr. H. J. Neubauer and myself, opened the abdomen for the removal of the sac. Some fluid was lost, but the sac and its contents weighed 15 pounds (6.8 kg.). The sac itself, which had a very small pedicle, attached to the tube, weighed 2 pounds (0.9 kg.). She was not weighed until the sixth day after operation, when her weight was 74½ pounds (33.8 kg.), a loss of 102 pounds (46 kg.) since entering the hospital.

Recovery was uneventful. She had to learn to walk, as her center of gravity was changed. She left the hospital, September 26, having gained 10 pounds (4.5 kg.). A letter from her, November 1, states that she is back to her normal weight of 100 pounds (45 kg.), and that she has resumed all her former activities.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

ERGOT ASEPTIC.—A liquid extract of ergot is standardized by the cocks comb method of assay so that 1 Cc. represents 2 Gm. of ergot.

Actions and Uses.—The same as those of ergot.

Dosage.—1 to 2 Cc. Ergot aseptic is intended for intramuscular injection. Ergot aseptic is marketed in ampules only. The date of manufacture appears on each package and the product is not guaranteed to possess its full potency for more than one year from time of manufacture.

Manufactured by Parke, Davis and Co., Detroit. No U. S. patent or trademark.

Ampules Ergot Aseptic 1 Cc.

Ergot is extracted with diluted alcohol acidulated with hydrochloric acid. The percolate is partially neutralized with alkali and concentrated by distillation in a partial vacuum at a temperature not above 80 C. A large excess of alcohol is added to the concentrated percolate and the material which precipitates is removed. The liquid portion is freed from alcohol by distillation in a partial vacuum at a low temperature, and chlorbutanol in the proportion of 0.005 Gm. per Cc. added to the aqueous, slightly acid liquid. After three weeks the liquid is assayed, adjusted to proper volume and sealed in ampules. The finished ampules are tested for sterility and potency.

Ergot aseptic is standardized so that when it is injected into the breast muscle of white, single comb Leghorn cocks, weighing between 1 and 2 Kg., it produces distinct darkening of the comb when it is given in doses of 0.25 Cc. per kilogram of body weight.

LOEFLUND'S MALT SOUP STOCK (DR. KELLER'S FORMULA).—A preparation essentially similar to extract of malt U. S. P. but containing a small amount of potassium carbonate. It contains in 100 Gm.: maltose, 54.26 Gm.; dextrin, 17.60 Gm.; protein, 3.73 Gm.; inorganic salts, 2.11 Gm., and water, 22.30 Gm.

Actions and Uses.—Loeflund's malt soup stock is designed for use in preparing the malt soup of Dr. Keller Universitäts-Kinderklinik, Breslau, Germany. The nutritive value of 500 Gm. corresponds approximately to 1,550 calories.

Dosage.—To prepare malt soup: 50 Gm. (1½ ounces) of wheat flour are beaten with ⅛ liter (about 10 fluid ounces) of cow's milk and the mixture passed through a sieve: 100 Gm. (3 ounces) of Loeflund's malt soup stock are dissolved in ⅝ liter (about 20 fluid ounces) of water at a temperature of 50 C. and the solution heated nearly to the boiling point. To this is then added the milk and flour mixture, and the whole is heated with constant stirring for from 3 to 5 minutes longer. The cooked product is placed in sterilized bottles.

Britt, Loeffler & Weil, New York, distributor. No U. S. patent or trademark.

Loeflund's Malt Soup Stock is a dark brown, syrupy liquid, having a faint, malt-like odor and a sweet taste. Soluble in water; also soluble in milk.

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SATURDAY, JANUARY 26, 1924

IMMUNE REACTIONS OF SCARLET FEVER

Schultz and Charlton,[1] in 1918, observed that when 1 c.c. of serum from a normal person or from one convalescent from scarlet fever was injected into the skin of a patient with acute scarlet fever, a blanching of the skin at the site of injection occurred. On the contrary, no blanching followed the injection of serum from persons with acute scarlet fever. Similar results were subsequently obtained by other observers. It was generally concluded that the test had no diagnostic value, and that absence of blanching gave no help in the diagnosis of scarlet fever in the person from whom the serum was obtained, because at times normal serum did not occasion blanching.

A recent report of further study by Mair[2] suggests that the test nevertheless may have distinct value in the study of the immunity and epidemiology of scarlet fever. Briefly, Mair's observations show that a local disappearance or blanching of the scarlet fever rash follows intracutaneous injections of the serum of persons convalescent from scarlet fever and of most normal persons. The serum of some normal persons, however, fails to cause blanching. Mair explains the sequence of events in this way: In scarlet fever, a toxin is elaborated to which are due the clinical manifestations of the disease, including the eruption on the skin. Recovery follows the production of antitoxin. If the serum of a person convalescent from scarlet fever is injected into the skin of a patient in the acute stage of the disease, the antitoxin in the serum neutralizes the local toxin, and, the cause of the eruption being removed, blanching follows. If, however, the serum of a person in the acute stage of the disease is injected, there is no blanching, as the serum contains no antitoxin. The serum of normal persons also often causes blanching, but to this there are exceptions, especially in children of the age when scarlet fever most often occurs. Mair believes that those normal persons whose serum causes blanching have antitoxin in their blood; i. e., these persons are immune from previous attacks of scarlet fever which often may have been mild and even unrecognized, while those whose serum does not cause blanching are susceptible to the disease.

The conception of scarlet fever as owing its symptoms to toxin that stimulates the body tissues to produce a neutralizing antitoxin brings it into line with the events in diphtheria. The striking benefit of convalescent serum in severe scarlet fever, reported by many clinicians, naturally suggested that the serum probably owes its action to substances of the nature of antitoxin.

A highly important element in our conception of scarlet fever is introduced by the observations of George F. Dick and Gladys H. Dick,[3] published in this issue of THE JOURNAL. A soluble toxic substance, obtained in cultures of certain hemolytic streptococci from patients with scarlet fever, long suspected as a possible cause of scarlet fever, may cause a local redness of the skin when injected intracutaneously. This effect is neutralized by mixing the culture filtrate with the serum of recovered patients. The reaction occurs in persons who have not had scarlet fever, and during the early stage of scarlet fever, but becomes less pronounced as the disease progresses, and is absent after recovery, and seemingly for a long time afterward. This suggests the production of a neutralizing antitoxic substance as normal recovery takes place. This reaction, then, which follows the injection of scarlet fever streptococcus filtrate appears to be an indication of susceptibility, and its absence an indication of immunity to scarlet fever. In other words, it looks as if the Dick test may assume the same importance in scarlet fever as does the Schick test in diphtheria.

These two reactions, the blanching of the skin in scarlet fever by serum from convalescent patients, and the Dick reaction with filtrates of cultures of certain streptococci, indicate strongly that substances of the nature of toxins play an essential part in causing the morbid phenomena peculiar to scarlet fever. It will be remembered that, several years ago, Dr. Ruth Tunnicliff[4] of the John McCormick Institute for Infectious Diseases reported observations on specific agglutination reactions with hemolytic streptococci isolated from scarlet fever patients. The Dick reaction, coupled with the successful production of scarlet fever by injection of the streptococci concerned into healthy persons,[5] seems to justify the hope that the problem of the cause and nature of scarlet fever is about to be solved, and that a sound experimental basis is being laid for the production of a specific curative serum for scarlet fever as well as for protective inoculation.

1. Schultz and Charlton: Ztschr. f. Kinderh. **17**: 328, 1918.
2. Mair, W.: An Immunity Reaction in Scarlet Fever, Lancet **2**: 1390 (Dec. 29) 1923.
3. Dick, G. F., and Dick, Gladys H.: A Skin Test for Susceptibility to Scarlet Fever, this issue, p. 265.
4. Tunnicliff, Ruth: Specific Nature of Hemolytic Streptococcus of Scarlet Fever, J. A. M. A. **74**: 1386 (May 15) 1920; Further Studies on Specificity of Streptococci, ibid. **78**: 1339 (Nov. 13) 1920.
5. Dick, G. F., and Dick, Gladys H.: Experimental Scarlet Fever, J. A. M. A. **81**: 1166 (Oct. 6) 1923; The Etiology of Scarlet Fever, this issue, p. 301.

THE COMPLEMENTAL FEEDING OF THE NEW-BORN

It appears that the school child is not the only human being that may often advantageously receive supplementary lunches.[1] As is well known, there is, as a rule, a loss of body weight rather than a gain during the first few days of postnatal life. The extent of the decrease varies considerably in individual babies, but losses of from 150 to 300 gm. (5 to 10 ounces) are not regarded as unusual. A recent record of the loss for fifty Chicago new-born infants under ordinary routine care at St. Luke's Hospital indicated an average of 282 gm., or 9 per cent. of the weight at birth. Opinion has been divided as to the real significance of this phenomenon. Some have regarded it as a result of the unprepardness of the infantile alimentary tract at the earliest age to cope with sufficient food to furnish the energy requisite for maintenance. They argue that the gastro-intestinal canal is immature in the earliest days of life, so that a few days is required for adjustment to the new functions that confront it when food intake begins. Meanwhile the infant's body consumes its store of energy represented by deposited fats. Calorimetric studies have clearly justified the conclusion that a condition of semistarvation ensues until the intake becomes adequate. Another interpretation of the loss of weight charges the outcome to the inefficiency of the food supply due to the poor yield of colostrum and milk in the earliest period of lactation.

If the enteric tract of the new-born were, indeed, seriously lacking in digestive capacity at the outset, it would be futile and perhaps positively detrimental to the infant to attempt complemental feeding. There is an accumulating mass of data, however, indicating that the giving of additional food is not harmful, and that the initial loss of weight may in many cases be reduced or almost entirely averted. Bachmann,[2] for example, in his observation on several hundred new-born infants, has not noted digestive disturbance either while the food was given or after the secretion of the mother's milk was established. His search for the most advantageous type of complemental food has not led to a definite indication, though in his recent report the best results were obtained generally with those formulas containing a relatively high sugar content. The babies to whom glucose solutions or modified milks were administered showed an average loss of 5 per cent., or one twentieth of the body weight, rather than the generally accepted 9 per cent., or one eleventh. Consequently, Bachmann seems warranted in concluding, in harmony with various other pediatricians, that the giving of simple formulas to the new-born infant is perfectly justifiable, and that it causes no clinical disturbances. A definite improvement was noted in lowering the initial weight loss, and in hastening the recovery of the birth weight. Apparently, the practice of complemental feeding has the empiric experience of centuries in its support. Fishberg has pointed out in THE JOURNAL[3] that the administration of sugar or of substances containing sugar to infants during the first few days of extra-uterine life is widespread among primitive, barbarous and civilized peoples. Many primitive tribes, he states, do not permit their new-born infants to take the breast for from two to five days after birth, and feed them with substances containing sugar, such as honey, coconut milk, fruit juices and sugar cane. Furthermore, Fishberg asserts that immigrants who come to this country from southeastern Europe have been giving sugar solution to their new-born, and they say that it is best for the nutrition of their babies. They do it because their ancestors have found it useful for generations.

1. Compare The Supplementary School Lunch, editorial, J. A. M. A. **81**: 2187 (Dec. 29) 1923.

2. Bachmann, H. A.: Observations on the Effect of Complemental Feeding in New-Born Infants, Am. J. Dis. Child. **26**: 349 (Oct.) 1922.

THE CONQUEST OF PELLAGRA

Less than a decade has elapsed since Goldberger and his associates began their studies of pellagra in this country. The developments of these investigations furnish an illustration of how significant knowledge of the etiology of disease may be for its proper management. If pellagra was due to an infection, as seemed to be the case to many students of the subject ten years ago, the public duty in the direction of prevention obviously lay in the introduction and enforcement of such sanitary measures as are accustomed to be efficacious in the face of infectious disease. The foremost need was to discover and eradicate the biologic agent that was involved. Problems of segregation and quarantine would need to be considered; in fact, drastic measures involving isolation of patients were actually adopted in some instances. This sort of procedure was likely to be superfluous if the etiologic factor lay in the diet—in circumstances wherein the individual rather than his hygienic surroundings was primarily concerned.

In the face of such doubt, the experts of the Public Health Service have continued their observations and have carefully collected data with respect to more than 700 persons, of whom more than half were pellagrins. These seem to indicate the preventability of pellagra by means of diet. The procedures carried out over a series of years in several institutions in which pellagra has been rampant have become familiar to readers of THE JOURNAL.[4] The institution diet was in each instance modified by reduction of the maize element and increase in the fresh animal protein foods—meat, milk (and at the orphanages, eggs) and legumes. All

3. Fishberg, Maurice: "The Care and Feeding of Infants," Correspondence, J. A. M. A. **80**: 421 (Feb. 10) 1923.

4. Those who are interested will find the essential details in the following papers: Goldberger, Waring and Willets: Pub. Health Rep. **30**: 3117 (Oct. 22) 1915. Goldberger: J. A. M. A. **66**: 471 (Feb. 12) 1916. Goldberger and Wheeler: Bull. 120, Hyg. Lab., U. S. P. H. S., February, 1920; Arch. Int. Med. **25**: 451 (May) 1920. Goldberger, Wheeler and Sydenstricker: Pub. Health Rep. **35**: 648 (March) 1920. Goldberger: J. A. M. A. **78**: 1676 (June 3) 1922.

other conditions, hygienic and sanitary, including association with active cases which from time to time were admitted, remained unchanged. Among the pellagrins a single recurrent case was noted during the first year following the inauguration of the modified diet, but none in the second or in the third year. Among the nonpellagrins there was not a single case.[5] A return to the institution diet immediately after the discontinuance of the formal study at one of the institutions was reported to have been followed by an incidence of pellagra of approximately 40 per cent. among the affected group. Resumption of the modified diet was again followed, during a period of observation of fourteen months, by complete disappearance of the disease.

During the study, the disease disappeared from the institutions, although a considerable prevalence at large in the corresponding states continued. More recently Goldberger and Tanner[6] treated eight cases of pellagra with fresh beef as the only known therapeutic element in the diet. In every case, they say, improvement followed the inauguration of the beef treatment. The preventive value of milk was similarly tested in a group of twenty-nine inmates of a state sanatorium. On supplementing the basic diet with about 40 ounces of buttermilk, no one developed pellagra during a period of observation lasting one year. Fresh butter (from pasture-fed cows) and cod liver oil ingested daily failed to prevent pellagra in the several instances in which they were tried. The primary etiologic factor in this disease, as these investigators point out, seems to be a faulty protein mixture, a deficiency in some unrecognized dietary complex, or a combination of these. If pellagra may be completely prevented by dietary changes, the idea that it is a communicable disease loses its principal support.

THE ETIOLOGY OF DENGUE FEVER

The casual reader of textbooks on infectious diseases may gain the impression that dengue or "break-bone fever" is a malady confined to tropical and semitropical countries. Mild epidemics are recorded to have visited Philadelphia, New York and Boston during warm weather; but, as a rule, dengue has not traversed regions beyond latitude 32 north. The real menace of the disease was impressed on this country by an epidemic of unprecedented proportions, originating in Galveston in June, 1922, and spreading over all of eastern and central Texas, and into neighboring states. The magnitude of the invasion is indicated by the report that more than half a million cases were estimated to have occurred in Texas alone. This emphasizes, perhaps more than any other feature can, how important it is to become accurately acquainted with the etiology of a malady of such highly infectious character.

It is only a few years since dengue, like yellow fever, was believed to be spread in the then accepted vague way "by the air, by contact with the diseased, and by fomites." Medicine is no longer satisfied with such indefinite definitions. To Graham is due the demonstration, now fairly well verified, that dengue can be transmitted by the bites of mosquitoes, and the indication that it is transmitted principally and probably exclusively by these insects. It was of more than incidental interest, therefore, to learn that the Galveston epidemic of last year was accompanied by a scourge of mosquitoes of the species (*Stegomyia fasciata*, or *Aedes aegypti*) responsible for the transmission of yellow fever. Chandler and Rice[7] were able to attempt transmission experiments on man in Texas with these insects. In four out of six cases, *Aedes* mosquitoes succeeded in transmitting the disease in from twenty-four to ninety-six hours after feeding on patients in the second to the fifth day of the disease. This is a new addition to the triumphs of medical research in which the heroism of human volunteers has contributed to the everlasting benefit of mankind by enlarging our sphere of knowledge of disease. Voluntary submission to the production of fever attended by extreme prostration and "break-bone" pains is a performance that should not be allowed to pass unnoticed and unpraised. Infection has been transmitted also by inoculations with the whole blood of patients. The incubation period in experimentally infected cases, both when the subject has been bitten by infected mosquitoes and when inoculated with a patient's blood, varied from four days and two hours to six days and twelve hours.

As early as 1907, Ashburn and Craig[8] indicated that the etiologic factor was probably a filtrable virus. The newer studies of Noguchi on yellow fever have by analogy suggested that delicate spirochetes may be the causative organism of dengue. There is no justification, however, for the occasionally expressed belief that dengue is a mild form of yellow fever. There are sufficiently unlike symptoms to permit a definite differential diagnosis. Furthermore, Chandler and Rice were unable, despite vigorous efforts, to secure any evidence of the involvement of a *Leptospira*-like organism in dengue as it occurred in Texas. The failure of cultural methods that are successful with known species of *Leptospira* make it unlikely that the disease involves an agent of spirochetal nature. This conclusion, as Chandler and Rice remark, is strengthened by a number of other considerations. Guinea-pigs are readily susceptible to the known kinds of *Leptospira* (*L. icterohemorrhagiae, L. icteroides, L. hebdomadis*), but are

5. Goldberger, Joseph; Waring, C. H., and Tanner, W. F.: Pellagra Prevention by Diet Among Institutional Inmates, Pub. Health Rep. **38**: 2361 (Oct. 12) 1923.

6. Goldberger, J., and Tanner, W. F.: Study of the Treatment and Prevention of Pellagra, Pub. Health Rep. **39**: 87 (Jan. 18) 1924.

7. Chandler, A. C., and Rice, L.: Observations on the Etiology of Dengue Fever, Am. J. Trop. Med. **3**: 233 (May) 1923.

8. Ashburn, P. M., and Craig, C. F.: Experimental Investigations Regarding the Etiology of Dengue Fever, Philippine J. Sc. (B) **2**: 93, 1907.

apparently immune to the virus of dengue. Moreover, in all the known *Leptospira* diseases (yellow fever, infectious jaundice, Japanese seven-day fever) the liver and kidneys are the organs most uniformly and injuriously attacked, resulting in jaundice and albuminuria, with excretion of the parasites with the urine; but in dengue neither the liver nor the kidneys are ordinarily attacked in uncomplicated cases.

Current Comment

ANNUAL EDUCATIONAL CONFERENCE

Last week we published the program [1] of the Nineteenth Annual Conference on Medical Education and Licensure to be held under the auspices of the Council on Medical Education and Hospitals. Subjects will be discussed which are both important and timely. Although many advances in medical education have been made during the last twenty years, other and newer problems have arisen, many of which will be dealt with in the forthcoming conference. The entire second day will be taken up by joint conferences on medical education and licensure, the central idea of which will be "the protection of the public against incompetent practitioners of the healing art." This topic is of particular importance in the light of the recent disclosures of diploma mill activities in Missouri, Arkansas and Connecticut, which are having their echoes in other states. Through state appropriations and private endowments, enormous sums are now being expended for the proper training of physicians. From the public point of view, therefore, it is extremely important that those licensed to care for the sick and suffering people should be required to demonstrate a reasonable degree of knowledge and skill in the use of more modern methods of diagnosis and treatment.

DERMATOSIS FROM FURS

From time to time, reports have appeared in medical literature of persons who have suffered severe eruptions and irritations of the skin following the wearing of furs. The suggestion has previously been made that this eruption is the result of special sensitivity to a dye substance known as paraphenylendiamin. Moreover, cases have also been reported of severe reactions when this substance was used as the basis for hair dyes or so-called color restoring preparations. Dr. R. Prosser White, dermatologist to the Royal Albert Edward Infirmary in England, has now completed a careful study [2] of the manner in which these eruptions are brought about. As is generally known, most of the furs now available as trimming for coats are not what they are presumed to be. Only recently, furriers were discussing the advisability of calling furs by their real names. The London Chamber of Commerce has, in fact, issued a list of counterfeits in which appear such remarkable substances as fitch dyed to represent sable, goat for bear, muskrat for seal, nutria for beaver, rabbit for seal, beaver, otter, mole, chinchilla or sable, and house cat for both skunk and sable. Dr. White's investigation of the methods used for preparing furs and dying them indicated that the substances of importance in the process which might cause dermatosis are paraphenylendiamin, which is used to produce a black color, and quinone, an oxidation product of paraphenylendiamin, which gives a brown color. By various manipulations with these and other chemical substances, it is possible to cause cheap furs to resemble any of the valuable or higher priced ones. Naturally, the workers who are engaged in preparing furs, as well as the buyers, suffer from the effects on the skin of various chemical substances. The vapor of quinone is irritating to the nose and eyes. The men working in fur establishments are likely to develop eruptions of the skin between the fingers. The angles of the mouth, corners of the eyelids, openings of the nose and creases of the neck are particularly attacked by the dye substances. After a study of the furs producing such reactions, Dr. White became convinced that in each instance the primary substance at fault is either the paraphenylendiamin or the derivative quinone. The quinone is a direct irritant, and the results do not appear to him to be due to any special sensitivity. Tests made with this substance in the presence of moisture invariably produced irritation of the skin. The only method of prevention that Dr. White can suggest is extreme care in the finishing and dying processes, with particular attention to washing so as to remove all excess dye and particularly traces of quinone from the fur. He also suggests that when paraphenylendiamin is used for cosmetic purposes, numerous rinsings be employed to prevent any excess of dye or of quinone remaining in the hair.

THE POSSIBLE POTENCIES OF MINUTE MATERIALS

The importance that exceedingly small quantities of certain substances may have for the "weal or woe" of man has been emphasized of late more conspicuously than ever before. In commenting on the minuteness of the requisite daily requirement of vitamin B, for example, Mendel [1] has remarked that it is probably represented by a few parts per million of the active body tissues. The attempt to express the potency of the much discussed toxin of *Bacillus botulinus* in definite dosage for test animals leads to an aggregation of decimal places that makes the tiny milligram appear enormously huge by comparison. How little iodin may determine the possibility of the prevention of goiter is suggested by the fact that the normal adult thyroid contains only 20 mg., or less than one-third grain, of this element. Yet we have recently been told [2] that it would require 2,000 years to drink enough Lake Superior water to accumulate this amount. Obviously, traces of iodin are taken in foods; otherwise, no one would

1. General News, J. A. M. A. **82**: 219 (Jan. 19) 1924.
2. White, R. P.: The Causes of Fur Dermatosis, J. State Med. **32**: 16 (Jan.) 1924.

1. Mendel, L. B.: Nutrition, Yale University Press, 1923, p. 97.
2. McClendon, J. F., and Hathaway, J. C.: Iodine Metabolism on Normal Diet in Relation to Prevention of Goiter, Proc. Soc. Exper. Biol. & Med. **21**: 129 (Nov.) 1923.

escape goiter in the lake region. The quantities are estimated at a few milligrams per ton of dehydrated food. Every clinician recognizes the surprising potency of epinephrin solutions of great dilution and also the marvelous prolonged effects that a few milligrams of thyroxin will exert on the metabolism. And now Abel [3] and his colleagues at Johns Hopkins University have isolated from the infundibular part of the pituitary a product still presumably impure, yet many hundreds of times as potent as the highly potent salts of histamin. In a dilution of 1 : 18,750,000,000 or many times more, it causes pronounced contractions of the virgin guinea-pig's uterus. Abel estimates that 1 gm. of infundibular tissue cannot contain more than 0.0002 gm. of the potent substance. An antidiuretic dose for human beings is smaller than 0.01 mg.[4] This is another example of the enormous potency of certain physiologic principles elaborated in special glands and which, in the very minutest quantities, may have important regulatory functions in the body. It also emphasizes the patience and persistence for which the accumulation of sufficient material for study and identification calls, not to mention the indispensable requisite of biochemical genius that leads to the discovery of the true nature of the physiologic hormones. The results of these difficult studies emphasize the duty of the public to give adequate support to research effort.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Society Wants Complete Check of Records.—At a special meeting of the council of the Arkansas Medical Society at Little Rock, January 15, a resolution was passed favoring a check of the records of the state board of medical examiners and the state eclectic board. A committee was appointed to check and verify the records of the state medical board from its beginning to the present time. Steps will be taken to revoke fraudulent licenses, if any are found. It was further resolved that there must be a well qualified composite medical examining board and that persons who practice in Arkansas shall meet the standards set up by the Association of American Medical Colleges. A committee was appointed to draft a new bill to meet these requirements, which will be introduced in the next session of the general assembly.

CALIFORNIA

Physician Fined.—According to reports, Dr. Hugh A. MacMillan, Long Beach, was fined $200, Dec. 25, 1923, when he pleaded guilty to violation of the Harrison Narcotic Law.

California Diploma Mills.—Two Los Angeles medical colleges face cancellation of charters and more than twenty physicians of the state have been ordered to appear before the state board of medical examiners to defend their right to practice, as the result of an investigation ordered by Dr. Percy T. Phillips, president of the board. The investigation followed receipt of charges that fraudulent certificates from the Los Angeles institutions had been seized in St. Louis during the recent exposé of the diploma mills. One of the institutions, the Pacific Medical College, is alleged to have sold a diploma for $300 to a man now under arrest in St. Louis. The other institution, the American University, is charged with offering diplomas as an "inducement" for Italians in Venice, Italy, to come to the United States as full-fledged American physicians. This "university" consists of one small up-stairs room in a Los Angeles suburb, the home of the "dean."

CONNECTICUT

Diploma Inquiry Continued.—It was announced, January 11, that the grand jury has been divided into subcommittees for the purpose of investigating diploma mills in Massachusetts and Missouri, and that they will be accompanied in these investigations by medical educators. The name of Maurice B. Burstan, Bridgeport, was sent to the health department with recommendation for revocation of his license, but a temporary injunction issued by Judge Banks and served on the health department forestalled this action. Additional names among those summoned to testify before the grand jury are: Jennie L. Cotner, Stamford; Morris Horwitz, Harry W. Pinkerton, Phillip S. Daly, Lillian L. Burstan, Ernest P. Hopper, Frank E. Gaylos, all of Bridgeport; D. J. C. Leondides, New Haven; A. C. H. von Sassenhofen, New Haven; John H. McClure, New Haven; Abraham Barshaw, New Haven; William B. De Bellis, Waterbury; Ralph Finaldi, Waterbury; G. W. Harding, Hartford; Catherine Lineham, Stamford; George S. Mulford, Greenwich; Albert W. Shenton, Norwalk; B. A. Bryon, Ridgefield; Boone J. Thomas, Falls Village; G. J. LaPlant, Thomsonville; E. H. Clough, Thomsonville; Samuel Alkow, Hartford; George J. Boucher, Bristol; Isaac W. Cornwall, Hartford; Mrs. George Kingsberg, Hartford, and John T. Andrews, Bridgeport. William Stone, a naturopath, owner of the Healthstone Sanatorium, New Milford, was also called with A. Paolillo, a chiropractor, and Louis Nutting, director of a physical culture school in Bridgeport. Marvin F. Adelman, Hartford, a chiropractor, was ordered to close his office. Adelman is said to have used an oscilloclast for diagnosis and treatment. He was convicted in the police court several years ago for violation of the state medical practice act and fined $100 and costs, according to reports. On January 11, the Rev. Antonio Roca, pastor of the Italian Baptist Church, Hartford, and Alfred W. Lowrie, Hartford, listed in the city directory as "a healer by and teacher of divine power," occupied the attention of the jury the greater part of the day. Roca has been practicing as a physician without a Connecticut license, in addition to being a pastor, it is alleged. He stated that he holds a diploma from the University of Naples, Italy, 1898, and that he practiced for the benefit of the poor in his congregation and not for profit. Asked whether he was a citizen of the United States he replied emphatically "No." Rudolph V. Walden, director of the Walden Institute, New Haven (THE JOURNAL, January 19, p. 215), was arrested in Richmond, Va., January 11, on a charge of practicing medicine without a license. The grand jury took a recess, January 11, until January 28, to permit the accumulation of evidence. Judging by the amount of evidence that remains to be considered, it appears the inquiry will last several months.

DISTRICT OF COLUMBIA

Public Health Lectures.—Dr. Joseph Colt Bloodgood, Baltimore, will give a series of public health lectures in Washington under the auspices of the Woman's Welfare Association.

Civilian Vocational Rehabilitation.—A national conference on civilian vocational rehabilitation will be held in Washington, February 4-8. For more than three years now thirty-six states have maintained an organization for the rehabilitation of those who are vocationally handicapped from accident or disease, in cooperation with the federal government. Officials in charge of the work, social and industrial workers and representatives of organized labor, will address the meeting.

GEORGIA

Hospital News.—Dr. Eugene B. Elder, former head of the Macon City Hospital, Macon, has been appointed superintendent of the Georgia Baptist Hospital, Atlanta, to succeed Dr. William B. Summerall.——Congress has appropriated $275,000 for the erection of Benning Hospital, Columbus. Construction work started Dec. 1, 1923.

ILLINOIS

Fire at Elgin Hospital.—Fire broke out in the basement of the Elgin State Hospital, Elgin, January 9, but little damage was done. Some of the buildings of the Elgin hospital were

3. Abel, J. J.; Rouiller, C. A., and Geiling, E. M. K.: Further Investigations of the Oxytocic-Pressor-Diuretic Principle of the Infundibular Portion of the Pituitary Gland, J. Pharmacol. & Exper. Therap. **22**: 289 (Nov.) 1923.

4. Abel, J. J., and Geiling, E. M. K.: A Preliminary Therapeutic Study of the Active Principle of the Infundibular Portion of the Pituitary Gland in Four Cases of Diabetes Insipidus, J. Pharmacol. & Exper. Therap. **22**: 317 (Nov.) 1923.

recently condemned as "fire-traps," following a survey after the recent catastrophe at the Dunning State Hospital.

City Council Overrules Health Officer.—As a result of protests by physicians of Geneseo against gas fumigation in measles cases, the city council, January 8, overruled Dr. Fred W. Carman, head of the board of health, and ordered fumigation stopped. Physicians of the city objected on the grounds that gas fumigation served no good purpose and endangered the lives of those in the homes.

Chicago

Personal.—Drs. William A. Pusey and Henry Bascom Thomas addressed the members of the Iowa and Illinois District Medical Association, January 10, at Davenport. The subjects were "Our Changing Knowledge of Eczema" and "Difficult Fractures," respectively.——Dr. Edith Barrett recently delivered a lecture before the All Australian Women's Conference at Melbourne.——Dr. B. Barker Beeson, Chicago, has been elected a corresponding member of the Danish Dermatological Society.——Dr. Henry F. Helmholz, head of the section of children's diseases, Mayo Clinic, Rochester, Minn., was the principal speaker at the annual meeting of the Infant Welfare Society of Chicago, January 16.

Another Million for Northwestern.—Mrs. Montgomery Ward announced, January 20, the gift of another $1,000,000 to Northwestern University. A contract of affiliation has been made with Wesley Memorial Hospital, to effect the construction of a large hospital on the McKinlock campus at Lake Shore Drive and Chicago Avenue. It is proposed to erect a 300 to 400 bed hospital for teaching purposes either adjacent to the medical building made possible by Mrs. Ward's gift, or under the same roof with it. Adjoining this will be a hospital for private patients; and at a later date a building for children, an orthopedic center, and neurologic and psychiatric buildings will be erected, in addition to a nurses' home and a home for hospital employees. The contract requires that the hospital be constructed before Jan. 1, 1929. Mr. Gilmore, superintendent of the hospital, stated that an effort will be made at the general conference of the Methodist Episcopal Church in May to have the church take over the present Wesley Memorial Hospital and operate it as a hospital and nurses' training school for negroes. The campaign to raise funds for the new hospital will begin at once.

INDIANA

Alien Physicians Will Not Be Licensed.—According to a regulation adopted, January 8, by the state board of medical examiners, foreigners who have not become naturalized citizens of the United States will not be admitted to practice medicine in Indiana.

Physician's License Revoked.—The Indiana license of Dr. James Dudley Banta, Rock Island, Ill., has been revoked by the state board of medical examiners. Banta is serving a sentence in the Fort Leavenworth Federal Prison for violation of the Harrison Narcotic Law.

State Examiners Reelected.—The officers of the Indiana State Board of Medical Examiners were all reelected for the ensuing year as follows: president, Dr. William A. Spurgeon, Muncie; vice president, Dr. Eldridge M. Shanklin, Hammond; secretary, Dr. William T. Gott, Crawfordsville, and treasurer, Dr. Jesse W. Bowers, Fort Wayne. July was set for the next examination.

Bureau of Publicity.—Dr. William N. Wishard, Indianapolis, has been appointed chairman; Dr. Franklin W. Cregor, Indianapolis, secretary, and Dr. James H. Stygall, Indianapolis, executive secretary, of the bureau of publicity for the Indiana State Medical Association. The advisory board consists of Dr. Samuel E. Earp, Indianapolis; Dr. Eldridge M. Shanklin, Hammond; Dr. Albert E. Bulson, Fort Wayne, editor of the *Journal of the Indiana State Medical Association*. The office of the bureau will be at 1004 Hume Mansur Building, Indianapolis, and the object is to provide accurate information to the public by lectures and publication as to what is being done in the medical sciences and to aid the local medical associations in bettering conditions in their communities. At the annual meeting in September $7,000 was appropriated to carry on this work.

LOUISIANA

City Health Officer Appointed.—Dr. Edmund L. Leckert, secretary-treasurer and sanitary officer of the board of health, New Orleans, has been appointed to succeed the late Dr. John Callan as superintendent of the board.

MAINE

County Medical Election.—At the annual meeting of the York County Medical Society at Biddeford, January 3, Dr. George R. Love, former mayor of Saco, was elected president; Dr. Arthur L. Jones, Old Orchard, vice president, and Dr. Charles F. Traynor, Biddeford, secretary. Dr. Jones, after twelve years' service, refused reelection as secretary. Dr. Charles A. Moulton, Hartland, president of the Maine Medical Association, gave an address.

MARYLAND

County Tuberculosis Clinics.—Tuberculosis clinics in every county of Maryland have been opened by the state department of health in cooperation with the state tuberculosis association. Dr. John M. Nicklas, Baltimore, is in charge of the clinics.

Officers Elected.—At a recent meeting of the Baltimore County Medical Society, the following officers were elected for the year: president, Dr. William A. Bridges, Towson; vice president, Dr. Robert H. Riley, Catonsville; secretary, Dr. William R. Dunton, Jr., Govans.

Canned Food Condemned.—The health department, Baltimore, January 4, condemned 32,000 cans of condensed milk found in one wholesale grocery house and 7,000 cans of fruit, vegetables and fish were condemned in another. This discovery of inferior canned goods led to a decision to examine all stocks now on the local market.

Plan to Reduce Negro Mortality.—Campaigns to reduce tuberculosis among negroes will be started by the Baltimore City Health Department and directed by Dr. V. L. Ellicott, epidemiologist. Educational methods will be used. The white death rate for tuberculosis decreased in 1923; the negro rate increased.

MASSACHUSETTS

Tufts Receives Bequest.—It was announced, January 9, by the president, John F. Cousens, that Tufts College, Boston, will receive more than $3,000,000 as a result of the settlement of the Fletcher will case in New York, recently.

Hospital News.—St. Luke's Hospital, New Bedford, has obtained a building permit for an eighty room addition costing $200,000.——A $95,000 hospital will be erected at Amesbury in the spring.——A $10,000 addition will be erected at the Fairview Hospital, Great Barrington.

MICHIGAN

Chiropractor Convicted.—According to reports Elmer G. Green of Belding and Ionia was recently sentenced to three months in the county jail for practicing medicine without a license.

Beaumont Lectures.—Dr. Ward J. MacNeal and Dr. Charles Gordon Heyd, of the New York Post-Graduate Medical School and Hospital, New York City, will give the Beaumont Foundation lectures in Detroit, January 28 and 29, on "Hepatitis and Its Relation to Chronic Abdominal Infection."

MINNESOTA

Central Minnesota Medical Association.—At the annual meeting of the association in Willmar, January 8, Dr. William P. Robertson, Litchfield, was elected president; Dr. Ludwig W. Anderson, Atwater, vice president, and Dr. Charles L. Scofield, Benson, secretary-treasurer.

Personal.—Dr. George McLeod Waldie has resigned as superintendent of Fair Oaks Lodge Sanatorium, Wadena, after five years of service. Dr. J. J. McKinnon, Wadena, will succeed him.——Dr. Maurice George A. Milan, formerly medical director of the Oak Park Tuberculosis Sanatorium, Thief River Falls, has joined the staff of the Warren Hospital, Warren, succeeding Dr. William W. Holley who resigned to locate in California.

MISSOURI

Practitioners Arrested.—As a result of grand jury investigation, it is reported that B. Jensen, W. L. Leonard, R. H. Stine and C. D. Rubertis, all of Excelsior Springs, have been placed under arrest charged with practicing medicine without a license. Eleven in all were indicted and among them were chiropractors and chiropodists.

Annual State Health Board Meeting.—At the meeting of the state board of health, January 8, at Jefferson City, all the present officers were reelected as follows: president, Dr.

Emmett P. North, St. Louis; vice president, Dr. Rudolph S. Vitt, St. Louis, and secretary, Dr. Cortez F. Enloe, Jefferson City. The board revoked the license of Dr. Bonivant R. Harmon, Springfield, on charges of violation of the Harrison Narcotic Law. Harmon, it is reported, is serving a four year term in the federal prison, Fort Leavenworth, Kan. The board refused to revoke the license of Otis W. Wilke, licensed chiropodist, Kansas City, as requested by the local chiropodists' association, who asked that his license be revoked on the ground that Wilke had served a term in prison.

NEBRASKA

Society News.—The Omaha division of the Nebraska Medical Women's Association entertained the medical women of the state and of Council Bluffs, Iowa, Nov. 17, 1923, in Omaha. The guests of the evening were Dr. Mathilda Hunt of London, England, and Dr. Mary McQuaker of Glasgow, Scotland.—— At the annual meeting of the Madison County Medical Society in Norfolk, Dec. 11, 1923, Dr. Arthur M. Sonneland, Norfolk, was elected president and Dr. George E. Charlton, Norfolk State Hospital, secretary-treasurer.

NEW JERSEY

Smallpox Epidemic Spreads.—Nearly forty cases of smallpox have been reported from Camden and Gloucester counties (THE JOURNAL, January 19, p. 216) to the state department of health within a week. The outbreak is believed to have been traced to a negro employed at a home in Erial.

NEW MEXICO

Changes in Health Officers.—Dr. Kuebal A. Bryant, Roswell, has resigned as full-time health officer of Chaves County after two years' service. The commissioners have appointed Dr. J. A. Smith, Roswell, to fill the vacancy.——Dr. C. S. Merriam has been appointed full-time health officer of Colfax County.——Dr. Clarence L. McClellan, president of the Curry County Medical Society, has been appointed health officer of the county to succeed Dr. William M. Lancaster who resigned recently.——The new full-time unit at McKinley County will have at its head Dr. William W. Johnston, formerly health officer of Racine, Wis.

NEW YORK

Chemical Prize Awarded.—Prof. Frederick M. Beckett, vice president of the Union Carbide and Carbon Research Laboratories, Inc., has been awarded the Perkin Medal, awarded annually by the Society of Chemical Industry, for the most valuable achievement in applied chemistry made by a citizen of the United States during the year. The award was made for Professor Beckett's researches on zirconium, and the elimination of impurities from tungsten ores.

Association for Prevention of Heart Disease.—At the annual meeting of the Association for the Prevention and Relief of Heart Disease, in New York City, January 16, the following board of governors was elected for a term of five years: Drs. Nathan E. Brill, Lewis A. Conner and Bernard S. Oppenheimer, all of New York, and Mr. Vernon Munroe and Mrs. A. F. Tiffany. The board of governors elected Dr. Haven Emerson president; Dr. Robert H. Halsey, vice president; Dr. William St. Lawrence, secretary, and Mr. Edwin O. Holter, treasurer.

Industrial Poisonings Reportable.—The state industrial commission has mailed to physicians a reprint of the Workmen's Compensation Law, inviting inquiries concerning its application to diseases and accidents in industry. Attention was directed particularly to the following:

Section 206. *Physicians' Reports of Industrial Poisonings.*—Every physician attending any person whom he believes to be suffering from poisoning by lead, phosphorus, arsenic, brass, wood alcohol, mercury or other compounds, or from anthrax, or compressed air illness, contracted as the result of the nature of such person's employment, shall send to the commissioner a report stating the name and address and place of employment of such person and the disease from which he is suffering, with such further information as may be required by the commissioner.

A list of diseases reportable under this section may be obtained from Dr. Leland E. Cofer, director, New York State Division of Industrial Hygiene, 124 East Twenty-Eighth Street, New York City.

New York City

Dinner to Hospital Staff.—The third annual dinner of the professional staff of the Carson C. Peck Memorial Hospital was held in Brooklyn, January 10. Dr. Charles Stiles Cochrane was toastmaster. The occasion was the fifth anniversary of the dedication of the hospital.

Caduceus Post's Banquet.—At the annual meeting and banquet of Caduceus Post 818, American Legion, at the Yale Club, New York, January 12, Dr. Graeme H. Hammond was elected commander and Drs. Nathan S. Jarvis, Samuel Bradbury and William C. Fisher, vice commanders. More than 150 army medical service men were present. The post now has about 400 members.

Dinner to Health Commissioner.—A dinner was held at the Hotel Commodore on the evening of January 17 at which Health Commissioner Dr. Frank J. Monaghan was the guest of honor. Persons prominent in business and professional life joined with about 1,200 employees of the health department on this occasion. Dr. Henry P. Swift, special deputy health commissioner, was toastmaster. Among the speakers were Senator Royal S. Copeland, Dr. Frank D. Jennings, Dr. John H. Barry and Dr. William H. Pond.

Narcotics Controlled.—Special deputy commissioner, Dr. Carleton Simon, in his annual report to the police department, says that as a result of an educational campaign, great headway has been made in combating the drug evil, and that the situation is under control. The report states that in 1921, there were 35,000 addicts in New York City known to the police. At present there are 9,000. Since Dr. Simon has been in charge of the narcotic division (three years), 10,553 cases of drug addiction have been disposed of by the narcotic division. Of 9,637 persons arrested 876 were opium smokers, 379 used morphin and 6,892 heroin and cocain, either separately or combined; 2 per cent. of those arrested were said to owe their habit to sickness, the other 98 per cent. to curiosity.

Society Plans War on Charlatans.—The Kings County Medical Society at its meeting, January 15, passed resolutions to inaugurate in the near future a most comprehensive campaign for the extermination of quack doctors and dentists. Under the plan proposed a fund of from $3,000 to $5,000 will be set aside to prosecute warfare against charlatans, and each member of the Kings County society is constituted a committee of one to comb his own neighborhood for illegal practitioners. The society unanimously went on record as opposed to the Rypins' bill which provides for the annual reregistration of physicians. It was suggested that the quack evil could be more effectively cured if a law were enacted making membership in county medical societies a condition precedent to engaging in practice. Dr. James N. Vander Veer of Albany made an address on "The Legislative Outlook for 1924," in which he stated that a recent survey indicated that physicians of the state were in favor of enactment of laws dealing with untrue advertisements in newspapers; compelling the payment of physicians' bills as preferred claims against decedents' estates; amending the Workmen's Compensation Law to permit free choice of physicians, and the barring of charlatanry from practice.

NORTH CAROLINA

Dr. McBrayer Resigns.—Dr. Lewis B. McBrayer has resigned as superintendent of the North Carolina Sanatorium for the Treatment of Tuberculosis, Sanatorium. He will be succeeded by Dr. Paul P. McCain, formerly assistant superintendent.

NORTH DAKOTA

State Board of Medical Examiners.—The members of the state board of medical examiners for the year 1924 have recently been announced as follows: Drs. William F. Sihler, Devils Lake, president; George M. Williamson, Grand Forks, secretary; Victor J. LaRose, Bismarck; Thomas L. DePuy, Jamestown; Paul H. Burton, Fargo; William A. Gerrish, Jamestown; Henry M. Waldren, Drayton; Henry H. Healy, Grand Forks, and Murdock MacGregor, Fargo.

OHIO

Meeting Changed.—The annual meeting of the Ohio State Medical Association will be held in Cleveland, May 13-15, instead of a week earlier, as previously planned.

Bellevue's Mayors.—For the second time in twenty-two years Bellevue's mayor is not a physician or dentist. Those who have been mayor during this period are: Drs. H. F. Billmyer, H. N. Donaldson, M. R. Nichols, H. C. Aurand and D. Lanterman.

Reciprocity with Tennessee.—The Ohio State Medical Board at a meeting, January 2, approved a reciprocal agreement with Tennessee. Applicants licensed by examination in either state subsequent to April 10, 1919, are eligible for registration in the other state without further examination provided

they have been in active practice for at least one year and if their preliminary and professional educational qualifications meet the requirements of the other state.

PENNSYLVANIA

Personal.—Dr. John R. Rose of New York has been elected superintendent of the State Hospital at Norristown.——Dr. John A. Lichty, who has been in practice in Pittsburgh, has accepted the position of superintendent of the Clifton Springs Sanitarium at Clifton Springs, N. Y.——Dr. Joseph Scattergood, West Chester, has been appointed health inspector for Bucks, Montgomery, Chester and Delaware counties by Dr. Charles H. Miner, secretary of the state board of health.——Dr. William F. Davison, Kingston, has been appointed supervising medical inspector of the schools in Luzerne and Lackawanna counties.

Plan of Mental Hygiene Division.—The reorganized Mental Hygiene Division of the Public Charities Association of Pennsylvania has announced the following plan for the next five years:

1. Informing the public through addresses, radio talks, moving pictures, exhibits, literature, magazines and newspaper articles about the nature, extent, causes, treatment and means for prevention of mental diseases, disorders and defects.
2. Promoting remedial legislation and bringing to the attention of the public and proper officials, the essential facts about the prevalence of mental disease, disorders and defects, and the financial and other needs of the state institutions for the mentally diseased, the epileptic and the feeble-minded.
3. Acting as a bureau of information about the examination and treatment of the mentally ill and deficient and about how to use the state institutions already provided for these patients.
4. Promoting the establishment and effective operation of free clinics for mental diseases, disorders and defects, especially in connection with state and other hospitals, courts and prisons.
5. Establishing branches of the division in the larger cities throughout the state.
6. Organizing courses of instruction in the recognition of the elementary problems of mental health for groups of teachers, nurses, social workers, visiting teachers, college students and medical students.
7. Conducting studies in various communities to determine the extent of such mental health problems within their borders as mental diseases, delinquency, feeble-mindedness, etc., so as to aid in securing proper treatment facilities for attacking these conditions.
8. Maintaining for general use a collection of the literature on the subject.

The medical director of the division, on duty since Jan. 1, 1924, at 419 South Fifteenth Street, Philadelphia, is Dr. Alfred J. Ostheimer, M.D., L.R.C.P. (London), M.R.C.S. (England). He was formerly associated with Dr. D. J. McCarthy in the practice of neuropsychiatry, served as a lieutenant-colonel in the medical corps of the army during the war, and since, has been in charge of the ex-service men suffering from mental and nervous diseases in the Third District of the U. S. Veterans' Bureau.

Philadelphia

Stewart Memorial Surgical Address.—Dr. Chevalier Jackson, professor of laryngology, Jefferson Medical College of Philadelphia, will give the R. W. Stewart Memorial Surgical Address, January 29, before the Pittsburgh Academy of Medicine.

Hospital News.—Through a special gifts committee Jefferson Hospital is making a drive for $1,500,000, to finance the building now under construction on Sansom Street on the site of the old Jefferson Hospital. This annex among other things will provide a clinical amphitheater, with a seating capacity of 500; the Lucy B. Henderson radium department and outpatient department; staff rooms, social service and occupational therapy departments; the Louis Clark Vanuxen roentgen-ray department; the dental and bronchoscopic clinic; three surgical operating rooms and two maternity delivery rooms.

RHODE ISLAND

Forty Years a Health Officer.—Dr. Charles V. Chapin, January 7, completed his fortieth year as superintendent of health of Providence. During the sixty-seven years since the office was created there have been but two incumbents. Dr. Chapin's predecessor was Dr. Edwin M. Snow, who died in 1888.

UTAH

Society News.—At the annual meeting of the Salt Lake County Medical Society, Dec. 10, 1923, in Salt Lake City, the following officers were elected for the ensuing year: president, Dr. Archibald A. Kerr; vice president, Dr. John Z. Brown; secretary, Dr. Maurice M. Critchlow, and treasurer, Dr. Joseph E. Jack.——Dr. Walter A. Whitlock, Layton, was elected president, and Dr. Roscal L. Draper, Ogden, secretary-treasurer, of the Weber County Medical Society at the annual meeting and banquet in Ogden, Dec. 18, 1923.

VIRGINIA

Superintendent Resigns.—Dr. William F. Drewry, for the past twenty-five years superintendent of the Central State Hospital, Petersburg, has resigned to become city manager of Petersburg. Dr. Hugh C. Henry, first assistant superintendent at the institution, has been appointed to succeed him.

Walter Reed Memorial.—The Seaboard Medical Society is negotiating to purchase the birthplace of the late Dr. Walter Reed, which will be maintained as a memorial. The old house in Gloucester County is in a dilapidated condition at the present time. In the spring of 1921 the Walter Reed Medical Society was organized as a memorial to the great Virginian.

Scientific Exhibit.—Dr. Austin I. Dodson, St. Elizabeth's Hospital, Richmond, received one of the three awards made by the Southern Medical Association at its annual convention in Washington, D. C., recently, for scientific exhibits. Dr. Dodson was the only person to whom an award was given, the other two recipients being the department of pathology, Medical School of Vanderbilt University, Nashville, Tenn., and the medical department of the U. S. Army, through the Army Medical Museum.

WEST VIRGINIA

Personal.—Drs. P. D. Barlow and O. P. Wilson were elected president and treasurer, respectively, of the Marshall County Medical Association, recently.——Dr. Vinton A. Shelby has been appointed full-time health officer of Harrison County.——Dr. Joseph B. Kirk, Bluefield, has been elected president, and Dr. Walter W. Harloe, Matoaka, secretary, of the Mercer County Medical Society.

WISCONSIN

Academy of Medicine Elects.—At the annual meeting of the Milwaukee Academy of Medicine, January 8, Dr. Oscar Lotz was elected president; Drs. John L. Yates and John S. Gordon, vice presidents; Dr. Lawrence G. Sykes, secretary, and Dr. Joseph P. McMahon, treasurer.

CANAL ZONE

Panama Ruins to Be Preserved.—Aside from the romantic interest that is attached to the ruined city, Panama is of medical interest. It is believed that the first hospital in the western hemisphere, Santo Tomas Hospital, of which the hospital of the same name in the modern city of Panama is the direct descendant, was established there. All that remains of the city, which was destroyed by Morgan, the pirate, is the bridge over which passed the men bearing Pizarro's loot and the ruined churches and public buildings. Recently the Alcalde of Panama decided to rid this national monument of squatters who disfigure it, and to clear the ruins of the jungle growth which obscures them, for the benefit of visitors.

CANADA

University News.—It was announced by the board of governors of the University of Toronto, Dec. 13, 1923, that the Rockefeller Foundation had definitely decided to donate $1,000,000 to the university as an endowment for the maintenance of the faculty of medicine, in recognition of the work accomplished there for the advancement of science.

Infant Mortality Reduced.—Marked reduction in the infant mortality rate at Thetford Mines, a small industrial city in the province of Quebec, following a three years demonstration has led the Provincial Government to appropriate $500,000 to establish a chain of clinics throughout the province. The work at Thetford Mines started with a maternity center opened by the Metropolitan Life Insurance Company in 1921. At that time, the infant mortality averaged 95 out of 281 babies born. Statistics for 1923 show that only 22 out of 300 babies died during the year. The prime minister of the Province of Quebec sent a letter to the president of the Metropolitan Life Insurance Company calling attention to the fact that the results accomplished by the health center at Thetford Mines were responsible for the appropriation from the government.

GENERAL

American Psychological Association.—At the annual meeting of the association in Madison, Wis., recently, Prof. G. Stanley Hall, Worcester, Mass., was elected president to succeed Lewis M. Terman, Stanford University, San Francisco. The next annual meeting will be held in Washington, D. C.

Central States Pediatric Society.—At the recent annual meeting of the society in Detroit the following officers were elected to serve during 1924: president, Dr. Edgar J. Huenekens, Minneapolis; vice president, Dr. Russell S. Rowland, Detroit, and secretary-treasurer, Dr. Henry T. Price, Pittsburgh.

Committee on "Diploma Mills."—At the meeting of the subcommittee of the U. S. Senate Committee on Education and Labor, January 14 (THE JOURNAL, January 19, p. 219), at which an investigation of diploma mills was ordered, the committee was told that eleven "fake" universities issue medical diplomas. Two of these are said to be in Baltimore, two in Wilmington, Del., two in Chicago, and one each in New York, Los Angeles, Hoboken, N. J., Washington, D. C., and St. Louis. Harry T. Brundige, reporter for the St. Louis *Star*, testified before the subcommittee.

American Student Health Association.—At the annual meeting of the association in Cincinnati, January 1-2, Dr. James E. P. Holland, university physician to the University of Indiana, Indianapolis, was elected president to succeed Dr. Joseph E. Raycroft, Princeton University, N. J. This association comprises the health directors of the leading universities and colleges in the United States and Canada. Dr. Robert J. Cook, Yale University, New Haven, Conn.; Dr. Thomas K. Richards, Harvard University, Boston, and Dr. William G. Donald, University of California, Oakland, among others, read papers.

Ban on Heroin Urged.—At a meeting of the Foreign Policy Association in New York, Dec. 8, 1923, a campaign was organized to abolish the international manufacture and use of the drug heroin. The question of heroin addiction was attacked from the judicial, the legislative and the medical points of view. Dr. Amos O. Squire, physician-in-charge, Sing Sing Prison, and Dr. Alexander Lambert, professor of clinical medicine at Cornell University, gave addresses. Prof. Joseph Chamberlain, professor of legislative drafting at Columbia University, is working on a plan to put the subject before Congress.

Howard University.—In the report of the president of Howard University to the Secretary of the Interior for the fiscal year ending June 30, 1923, it was said that an additional income of $25,000 yearly, in addition to tuition fees, is necessary in order that the medical school may still retain its Class A standing. An endowment campaign was successfully carried out this year, the university raising $250,000 by subscription, and the General Education Board giving an equal amount. The present buildings are old, dating from 1869, and wholly inadequate, necessitating limiting the classes to fifty. This is a serious limitation, the report states, as at least 350 graduates are needed each year to care for the colored population. The registration for 1922-1923 was 222 medical students. Degrees were conferred on twenty-seven.

Plans to Reduce Industrial Accidents.—The National Industrial Conference Board, New York City, has announced practical operation of a nation-wide "Industrial Safety Day," to reduce accidents in American industry. The board, which has been working for two years in cooperation with the American Engineering Standards Committee, the New York State Department of Labor and other agencies, will have the day designated by proclamation of the governor. Estimates by government experts show that accidents to workers this year will probably cause more than 21,000 deaths and a money loss of more than a billion dollars. The new plan resulted from the discovery that deaths and accidents to workers have shown no appreciable decrease in the last few years, while the money loss through idleness, medical treatment and insurance has risen.

Senate Passes Bill to Protect Coastal Waters.—A bill which passed the Senate, January 16, forbids the pollution of coastal waters of the United States by the discharge from ships or manufacturing plants of oil or other refuse material. The measure was in response to a widespread demand that the government stop the damage to public and private property from the unnecessary pollution of coastal waters. Hearings before the Committee on Commerce brought out the fact that refuse oils floating on the surface of water accumulated about the foundations of buildings at tidewater and on piles and piers and increased to an alarming extent the fire hazard. It was shown that oil and refuse had a deleterious effect on sea food, oysters, clams and lobsters, and that it was a menace to public health. Complaints were made by resort owners and persons frequenting bathing beaches. Bathing beaches have frequently been made unfit to use by the deposit of oil sludge. The enforcement of the law is placed on the Secretary of War.

Chemical Society Prize Essays.—With Herbert Hoover as chairman, a committee was formed, January 14, to act as judges in the American Chemical Society's Prize Essay Contest (THE JOURNAL, Sept. 22, 1923, p. 1030, and Nov. 3, 1923, p. 1532). Dr. Charles H. Mayo, Rochester, Minn., represents the medical profession on the committee and Profs. J. R. Angell, president of Yale University; J. C. Merriam, head of the Carnegie Institute, Washington, D. C.; H. N. MacCracken, president of Vassar College, and Edgar Fahs Smith, past president of the American Chemical Society and former provost of the University of Pennsylvania, are members. The competition will close April 1. This contest was the result of a gift of Mr. and Mrs. F. P. Garvan of New York, in memory of their daughter. Six cash prizes are being offered to the winners in each state and six scholarships to Yale University or Vassar College will be awarded in the national contest. This means a four year scholarship at either college with $500 a year in addition to tuition fees.

Tax on Nonbeverage Alcohol.—In hearings before the Ways and Means Committee of the House on the Mellon Tax Reduction Bill there has developed a sharp division of opinion on reducing the tax on nonbeverage alcohol. Representatives of the retail druggists want the reduction or elimination of the existing tax of $1.10 per gallon. The American Drug Manufacturers' Association, in opposing this reduction, claims that reduction or removal of the tax means no saving to the public. They say that "patent medicines" selling at $1 for 12 ounces contain on the average not over 10 per cent. of alcohol, that is 1⅕ ounces of alcohol in "patent medicine" costing $1. The tax reduction proposed amounts to about 1.8 cents an ounce. The reduction in the alcohol tax would therefore reduce the price to the public about 2 cents on the average $1 bottle. The drug manufacturers also urge that the present tax is a great preventive of the illegitimate use of alcohol, and that reducing it will open the gates to bootleggers, will not benefit the public and will increase the supply of illegal liquor in "patent medicines."

Association of American Medical Colleges.—At the thirty-fourth annual meeting of the association at Omaha, February 28-March 1, the following program will be presented:

An Experiment in Interdepartmental Correlation, Don R. Joseph, vice dean, St. Louis University School of Medicine, St. Louis.

Experience with Medical Clinics to the First Year Classes, Oliver H. Perry Pepper, assistant professor of medicine, University of Pennsylvania Medical School, Philadelphia.

Teaching of Pharmacology, Walter L. Bierring, examiner in pharmacology, National Board of Medical Examiners.

The Poor Boy in Medicine, Walter L. Niles, dean, Cornell University Medical College, New York City.

A Provision for Increase in Medical School Enrolment Without Increase in Physical Equipment, Burton D. Myers, assistant dean, Indiana University School of Medicine, Bloomington.

Again, the Fifth or Intern Year: A Retrospect, Lionel S. Schmitt, associate dean, University of California Medical School, San Francisco.

The Determination of Content of Professional and Preprofessional Training, Samuel P. Capen, Ph.D., chancellor, University of Buffalo Department of Medicine.

Report of Committee on Education and Pedagogics, Ray Lyman Wilbur, President of the American Medical Association.

The New Medical Curriculum, Stuart Graves, dean, University of Louisville (Ky.) School of Medicine.

Keeping the House in Order, Herman G. Weiskotten, dean, Syracuse University College of Medicine.

The Case of the Postgraduate Medical School, William Dick Cutter, dean, New York Post-Graduate Medical School, New York City.

The president's address, Basic Principles of Clinical Teaching, will be given by Irving S. Cutter, dean, University of Nebraska College of Medicine, Omaha.

LATIN AMERICA

Argentina Attacks Quacks.—The police have started an energetic campaign against many irregular practitioners of medicine in the Argentine, who, by advertisements of "marvelous" curative treatments for diseases, carried on a lucrative and fraudulent business. Many deaths have been proved to be caused by the intervention of these quacks, in whom the peasant people trust for relief.

Drugs in Peru.—Regulations of the public health service regarding the importation and sale of drugs and chemicals have recently been issued. No pharmaceutical specialty can be sold in the drug stores of the republic unless it has previously been analyzed by the drugs inspection committee and authorized by the board of health; all pharmaceutical specialties must bear a label showing the chemical composition, according to the decimal metric system, and the date of the authorization granted by the board of health; importation of new chemical specialties by commercial firms not belonging to the pharmaceutical profession is strictly prohibited; after Sept. 1, 1923, no pharmaceutical specialty could be imported into the republic which does not bear on each container the formula giving its ingredients. It has been

reported that an agreement was made whereby the drugs inspection committee granted an extension of the latter article until Jan. 1, 1924, on which date it became effective. This concession was granted in view of an application made by a number of druggists who allege that, owing to the inability to obtain copies of the regulations, they have been unable to advise their principals in foreign countries of the changes.

FOREIGN

Hero Fund to Roentgenologist.—The Carnegie Hero Fund trustees have awarded the honorary certificate and allowance of $375 a year to Reginald Blacknall, roentgenographer at the London Hospital, England, for twenty years, who, as the result of roentgen-ray work, contracted carcinoma, necessitating the amputation of both hands.

Personal.—Dr. G. Pittaluga, professor of parasitology at Madrid, has been elected a member of the international committee on hygiene of the League of Nations.——The Rodríguez Abaytúa prize for 1923 was awarded by the Academia Médico-Quirúrgica at Madrid to Dr. Justo Caballero Fernández for his work, "Regulation of Glycemia."

Radium in Belgium.—The *Presse médicale* states that the four universities in Belgium have recently received 8 gm. of radium element from the radium deposits in the Congo. Professor Bayet is in charge of the Radium Institute at Brussels, and one of his assistants, Dr. Sluys, has devised a method for intensifying the production of electrons by introducing into the tumor gold or platinum needles during the exposures to radium. He calls this "deep betatherapy."

New Regulations for Public Health Diplomas.—New regulations of the General Medical Council of Great Britain for the Diploma in Public Health apply after January 1. Under the old rules candidates for the diploma might enter on the curriculum at any time after obtaining a registrable qualification in medicine and surgery. New rules require that not less than two years elapse after obtaining a registrable qualification before admission to the final examination for a public health diploma. The curriculum must extend over not less than twelve months; at least five months must be given to practical laboratory instruction in bacteriology and parasitology, in chemistry and physics in relation to public health, and in meteorology and climatology. The regulations as to attendance at a hospital for infectious disease have also been made more stringent. The candidate must have six months' practical training under a medical officer of health, which must include maternity and child welfare, the services relating to school life, venereal disease and tuberculosis, industrial hygiene and food, meat and milk inspection.

Government Services

Annual Report of Veterans' Bureau

In the annual report of the U. S. Veterans' Bureau for the fiscal year ending June 30, 1923, the director indicates that at the close of the fiscal year, ninety-one government hospitals with a total bed capacity of 25,714 were in operation. The number of patients in these hospitals averaged 16,967 throughout the year. It was necessary for the Veterans' Bureau to utilize also 1,009 civil hospitals in which the number of beneficiaries approximated 7,586. The highest number of veterans in hospital was reached March 1, 1922, when there were about 31,000 patients, of whom 12,274 were tuberculous. The maximum number of neuropsychiatric patients was reached in March, 1923, with 9,525. The general and surgical cases were highest in August, 1921, with 9,793 patients in hospitals. The largest number of men in training was reached in April, 1922, when there were about 110,000 taking vocational courses.

COMPENSATION CLAIMS

At the end of the fiscal year, June 30, 1923, there had been filed 930,286 compensation claims, all of which except 9,555 had been adjudicated. On that date 183,090 disability awards and 55,334 death compensation awards were active. These represent monthly payments for disability of $6,802,890 and $1,419,640 which was an average of $37.15 for disability and $25.65 per active award for total compensation. On that date there were 540,273 active insurance policies representing $2,885,633,100 of insurance. More than 195,000 insurance claims had been filed and all except 1,007 adjudicated. There were 82,814 admissions to hospitals during the fiscal year; 2,099,424 outpatient treatments were given to veterans, and 1,526,766 medical and dental examinations made.

VOCATIONAL TRAINING

About 2,340 colleges and schools and 28,000 business establishments cooperated with the Veterans' Bureau in giving vocational training. The bureau operated fourteen resident vocational schools and seventeen nonresident vocational schools to provide training for veterans which could not be obtained in other schools, and 445 trades and professions were taught. There have been 38,043 veterans rehabilitated and remunerative employment has been secured for all except 836. Ninety per cent. of all active disability compensation awards on June 30, 1923, were rated less than 50 per cent. disability and total disability. On that date there were still in training 972 who began training during the fiscal year 1919; that is, 26 per cent. of the trainees who began in the first fiscal year that training was given are still in training. A study of 13,066 rehabilitated veterans indicates that the longest period required for training was for machinists who required an average of 27.4 months from the date of entrance to the day of rehabilitation; the next longest period, 27.2 months was for draftsmen; then followed pharmacists, lawyers, photographers and automobile salesmen. The lowest number of months in training of rehabilitated veterans was 16.3 for physicians. It is interesting to note that among veterans having had four years of college the largest number chose medicine, and the next largest number chose law. It is presumed that a number of the physicians rehabilitated took postgraduate courses. The largest number of rehabilitated veterans having neuropsychiatric disabilities selected mechanics. The average pay received by veterans in training has gradually increased and at the close of the year averaged $126 per month. The total expenditure for relief activities for the fiscal year was $447,648,639. It is estimated that the cost will gradually decrease, when in 1927, it will be about $285,000,000. There were twelve U. S. Veterans' Bureau hospitals for the treatment of neuropsychiatric patients on June 30, 1923, and no hospitals for these patients were closed during the year. There were 59.7 per cent. of the neuropsychiatric patients under treatment in government institutions. Eight hospitals for general medical and surgical cases were closed during the year, and there were still in use twenty hospitals for such cases. In addition to hospitals the Veterans' Bureau operated ninety-seven dispensaries, one Class B dispensary and twenty Class C dispensaries having been closed during the year. It is said in this report that before veterans are given training in medicine, an investigation is made to determine the suitability of the school in which training is to be given, and that training is provided only in institutions which meet the requirements of the Council on Medical Education and Hospitals of the American Medical Association. At the time of this report, there were 968 trainees in medical schools. In addition there were ninety-nine taking training in osteopathy and 314 in chiropractic.

Proposed Legislation for Ex-Service Men

All ex-service men, irrespective of the origin of their ailments, will receive free government hospital treatment according to provisions of legislation approved by the House Committee on Public Buildings and Grounds, which is about to be reported to the House of Representatives. Director Hines sponsored this legislation and he expects to provide free hospital treatment, food and medicines at a relatively small additional cost above that required to keep up the present Veterans' Bureau hospitals. Data have also been presented to the committee by General Hines for the completion of the present hospital system which will require an expenditure of about $6,500,000. The committee has agreed to report favorably a bill carrying such appropriation. This will make a total of $47,500,000 to be provided for hospitals for ex-service men.

Hospitals Authorized

Pursuant to instructions of the Secretary of War, the organization of Surgical Hospital No. 17 (Frankford Hospital Unit, Philadelphia); Evacuation Hospital No. 3 (New York Post-Graduate Medical School and Hospital Unit, New York City); Surgical Hospital No. 10 (New York Post-Graduate Medical School and Hospital Unit, New York City); General Hospital No. 2 (Presbyterian Hospital Unit, New York City), and General Hospital No. 39 (Yale-New Haven Hospital Unit, New Haven, Conn.), organized reserves, has been authorized.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 1, 1924.

The Vital Statistics of 1923

In spite of the aftermath of the war, which has taken the form of trade depression and unemployment of a degree heretofore unknown to the present generation, it appears (though the complete figures are not yet available) that the year 1923 was the healthiest in our records. Indeed, the English people seem to have enjoyed during the year a freedom from disease not experienced by any population of the same size at any period in the world's history. The following figures show the extraordinary improvement that has taken place:

Death Rate Per Thousand Population, England and Wales

Year							
1911	1912	1913	1919	1920	1921	1922	1923
14.6	13.3	13.8	13.7	12.4	12.1*	12.9	11.8

* Lowest on record until 1923.

London, always healthy in comparison with the other great cities of the world, had the lowest death rate on record:

London

Year				
1919	1920	1921	1922	1923
13.6	12.6	12.4	13.4	11.3

The large cities show a similar improvement:

One Hundred and Five Large Cities of England and Wales

Year		
1921	1922	1923
12.3	13.0	11.6

An important cause of this low mortality has been the comparative absence of influenza and also of the usual epidemics of measles until the very end of the year. The other great killing diseases—tuberculosis and heart disease—were slightly less prevalent, but cancer showed no improvement. The health of infants was remarkably good:

Infant Mortality, Deaths Under One Year Per Thousand Births

	Year							
	1911	1912	1913	1919	1920	1921	1922	1923
England and Wales	130	95	105	80	80	83	77	70
London	129	91	105	85	75	80	74	60

Thus, the 1923 figures are the lowest ever recorded. Since 1881, the infant mortality has fallen by half. It seems also that the birth rate for 1923 will be the lowest on record, though the figure is still tentative. The following table shows the almost continuous fall of recent years, the increase of 1920 being explained by the disturbance of the war:

Birth Rates Per Thousand Population, England and Wales

Year					
1913	1914	1920	1921	1922	1923
24.1	23.8	25.5	22.4	20.4	20.2

An important cause of the low infant mortality was the comparative absence of severe epidemics of summer diarrhea and measles. The reduction of the amount of summer diarrhea can be explained by improved hygiene, largely due to infant welfare work, also to the substitution of motor for horse traffic, with corresponding diminution of pollution of the streets with animal excreta. The neglect of vaccination will prepare readers for an increase of smallpox:

Smallpox Cases Notified in England and Wales

	Year											
	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Cases..	111	90	57	78	135	6	51	262	243	311	967	2,461

A remarkable decline in other notifiable infectious diseases—with the unfortunate exception of puerperal fever—is shown in the following table:

Cases Notified

	England and Wales		London	
Disease	1922	1923	1922	1923
Pneumonia	52,435	44,665	7,066	4,789
Scarlet fever	108,242	85,472	17,223	10,089
Diphtheria	53,158	34,097	15,269	10,367
Smallpox	967	2,461	63	11
Typhoid	2,414	3,354	265	342
Puerperal fever	2,134	2,217	311	364
Ophthalmia neonatorum	7,107	6,587	870	765

The contrast between the figures for smallpox for London and for the rest of the country are noteworthy. Light is thrown on it by a previous letter (The Defense of London Against Smallpox, THE JOURNAL, Oct. 20, 1923, p. 1374).

Foot and Mouth Disease in England

An epizootic of foot and mouth disease prevails in England. Outbreaks amounting to nearly 2,000 have occurred all over the country. The number of animals slaughtered because of the disease are: cattle, 54,674; sheep, 22,435; pigs, 27,873; goats, 39. The compensation that has had to be paid to owners amounts to $8,000,000. So far this extensive slaughtering and disinfection seem to have had no effect in checking the spread of the disease. It is expected that the policy of enforcing slaughter will be abandoned, and that owners will be permitted to try to cure the diseased animals by veterinary treatment, subject to guaranteeing isolation.

Medical School for Native Physicians in South Africa

The Rand *Daily Mail* states that a medical school for native students will come into existence in the present year at Fort Hare, where preliminary education in the fundamental sciences of the medical course will be given for two years, followed by a three year course in clinical work at the Durban native hospital. To secure registration by the South African General Medical Council, native students entering on this course must first matriculate, then follow a five year course similar to that in operation in the medical schools of Great Britain. Several natives who have matriculated and were about to complete their studies oversea have signified their intention of taking the course in Africa. They contend that in this way they will come into contact with the maladies that are most prevalent among natives in their home surroundings.

The After-Care of Tuberculous Patients

The ministry of health has addressed a letter to the various local authorities respecting the supervision and settlement of tuberculous men discharged from residential institutions after a course of treatment. The local tuberculosis officer should

be notified at least six weeks before the discharge. If this is not practicable, as long notice as possible should be given. The tuberculosis officer is to notify each case to the tuberculosis care committee, if one has been established in the area, and, in the case of ex-service men, to the regional office of the ministry of pensions also. Steps are to be taken in good time by the tuberculosis officer to ascertain the home conditions of the patient and the occupation to which he proposes to return. It will be for the tuberculosis officer to consider in each case how far the home conditions or the occupation are definitely unsuitable, whether they can be made suitable, and, if not, what recommendation can be made to meet the case. If the home conditions are unsatisfactory, the tuberculosis officer is to take such action as may be practicable to improve them. When a change of occupation is considered necessary, the various committees and officials are to take steps to assist the patient to obtain employment. The minister of health asks for the cooperation of all local agencies, especially in the case of men whose diseases have been held to be attributable to war service or aggravated by it.

Reduction in the Price of Insulin

The Medical Research Council announces that the retail price of insulin is to be reduced to $3 per hundred units. The price since July has been $4, and before that was $6. The reduction in price is attributed to increased efficiency of manufacturing and to the larger scale of production following the increased demand. Some further reduction as the scale of production increases is thought possible by the manufacturers. But, apart from the possibility of new sources or methods being discovered, the price cannot be brought to a low level. The reduction in price has been made notwithstanding the enhancement of the unit, which is now equal to the American.

The Red Discoloration of Salted Fish

The condition known as "pink" or "pink eye," to which dried salted fish is liable, has been investigated by Dr. P. C. Clarke on behalf of the Fish Preservation Committee of the Food Investigation Board of the Department of Scientific and Industrial Research. The condition was first investigated in the United States by W. G. Farlow for the Commission of Fish and Fisheries, and later by French, British and Canadian workers. Their views as to its cause and significance were divergent. Dr. Clarke has cleared up much that was obscure. He attributes the discoloration to a red coccus which occurs in a coccal and sarcinal form, and to an unidentified organism, which breaks up in diluted salt solution into an amorphous slime. These two organisms are due to the use for curing of salt contaminated by them. Contaminated salt is found in the salt-encrusted walls of the curers' stores and on the surfaces of the tables used for curing. The organisms grow only in high salt concentrations. "Pink" can be prevented by sterilizing the salt by exposure to 248 F. for thirty minutes, and cleansing the stores and utensils. Another method is to dry the fish more than has been done in the past, as the organisms do not then grow, but this diminishes the palatability of the fish. The pink growths are not in themselves injurious to health, but the conditions of warmth and moisture under which they appear are favorable to the growth of putrescent organisms, which are liable to render the fish unfit for food. However, the relation of the growth of "pink" to putrefaction requires further investigation.

Another Rockefeller Donation

The trustees of the Rockefeller Foundation have announced their intention to make a donation of $70,000 to the Welsh National School of Medicine, Cardiff, for the building of new laboratories and clinic facilities.

PARIS

(From Our Regular Correspondent)

Dec. 28, 1923.

Army Health Statistics During the War

Dr. Toubert, inspector general and director of the army medical corps, has published in the *Archives de médecine et de pharmacie militaires* an interesting article in which he analyzes several documents of the World War that pertain to the activities of the army medical corps.

NUMBER OF EFFECTIVES

When in 1914 mobilization orders were first issued, the standing army of France consisted of 817,000 men. About two weeks later, the total number of men under arms was 3,704,000. From this time on, additions were made to the army at regular intervals. When the armistice was signed, including the men recovering from wounds and illness and the men progressively called to the colors, the number had reached the imposing total of 7,842,000. If to this we add the officers, we get a round total of 8,407,000. In this total, the colonial troops (215,000 men) and the North African contingents (260,000 men) are not included. Adding these, we get a grand total of 8,882,000 officers and men. The number of men present on the French front varied within quite narrow limits, the minimum having been around 2,600,000 and the maximum 2,800,000. From these facts we are forced to the conclusion that, for this prolonged struggle, of the character of an open-field war at the beginning and end, and fought from established positions during the intervening period, it was necessary to mobilize approximately three times as many men as were kept permanently at the French front.

LOSSES IN MEN

The total losses of the French army amounted to 1,325,000 men. Approximately 674,700 were killed by the fire of the enemy, and 225,300 were listed as "unaccounted for, presumably killed," making a total of 900,000 killed; 250,000 died from wounds and 175,000 as the result of disease. The immediate losses in killed amounted to 60 per cent. of the total number of deaths; the remaining deaths resulted from wounds or disease. The losses due to the fire of the enemy (the killed and the wounded who died from their wounds) amounted to 86 per cent. of the total losses; losses due to disease represented less than 14 per cent. of the total.

WOUNDS DUE TO THE VARIOUS CLASSES OF FIREARMS

As regards the relative proportion of wounds caused by infantry, artillery and other projectiles and explosives, the World War presents characteristics quite different from the wars of the half century immediately preceding. During the Crimean War, the wounds caused by artillery fire as compared with the wounds caused by infantry fire were in about the proportion of 4 to 5. During the period that followed, the predominance of the effects of infantry fire over the damage done by artillery fire became more and more marked. Thus, during the Franco-Prussian War of 1870-1871, the proportion of wounds due to artillery fire as compared with the wounds resulting from infantry fire was as 1 to 3 in the French army and as 1 to 10 in the German army. During the Russo-Japanese war of 1904-1905, the proportion was as 1 to 10 in the Japanese army and as 1 to 6 in the Russian army. In 1914, the proportion was reversed. A constant predominance of the effects of artillery fire over infantry fire was noted. In the year 1914, 75 per cent. of the wounds were due to artillery fire, 23 per cent. to infantry fire, and 2 per cent. to other explosives. In 1917, the proportions were, respectively, 56 per cent, 11 per cent. and 33 per cent., and in 1918 they were 54 per cent., 15 per cent. and 31 per cent.

In other words, the wounds from artillery fire ranged from three quarters to a little more than half of the total number of wounds; the wounds from infantry fire amounted at first to one third, then to one quarter and finally to one fifth of the wounds from artillery. The other vulnerable agents (grenades, mines, torpedoes), toward the close of the war, claimed a proportion equal to about one third of the total number of wounds caused by the fire of the enemy.

THE PROPORTION AFFECTED BY DISEASE

The two diseases that had the highest incidence in the armies—the one during the first and the other during the last months of the war—were typhoid fever (or, to be more exact, typhoid and paratyphoid) and influenza. The total number of cases of typhoid disease totaled 110,000 for the whole duration of the war, which resulted in 9,000 deaths. But it is noteworthy that, under the influence of typhoid and paratyphoid vaccination, which, as time went on, was carried out in continually increasing numbers and with improving technic, the curve for these diseases fell from year to year with astonishing rapidity. The monthly averages of new cases ranged from 6,712 (1914-1915) to 1,053 (1916), 140 (1917) and 64 (1918).

Among the French troops at the front, there were 195,000 cases of influenza, although the epidemic extended over only the last nine months of 1918; this means that there were more than 21,000 cases a month. The total number of deaths from influenza in the army exceeded 12,000, or a mortality of more than 1,300 a month.

Aside from the great influenza epidemic that marked the close of the war, it may be said that, once the typhoid affections had been brought under control through vaccination, there were no distinctive epidemic diseases due to the World War. It is worthy of note that the ordinary epidemic diseases of peace times (measles, scarlet fever, mumps and diphtheria) scarcely affected the troops at the front—less, in fact, than the troops at the rear—the proportion being 1 to 5, 1 to 3, or 1 to 2, for different diseases. The proportion of effectives affected by these diseases was always small, rarely reaching 1 per thousand for the troops at the front, and remaining around 2 or 3 per thousand for the troops mobilized at the rear.

THE PERSONNEL OF THE ARMY MEDICAL CORPS

The number of physicians mobilized for the army medical corps amounted to 80 per cent. of the total number of physicians practicing in France. On the date of the armistice, there were 21,181 physicians mobilized, 1,707 being assigned to the fighting forces and 19,474 to the reserves; the former were accordingly less than 10 per cent. of the total. On the same date, there were 3,828 pharmacists, 120,352 male nurses and 10,000 female nurses. Of the female nurses, 5,100 were army nurses and 5,000 were from the Red Cross, serving with the units of the medical corps.

Interns for the Hospitals of Paris

The results of the competitive examination to decide internship appointments in the hospitals of Paris have been announced, seventy-six interns and seventy-six provisional interns having been appointed. Among the seventy-six interns there are five women, one of whom (Mlle. Dreyfus-See) made the highest grade of all candidates in the competitive test; this is the first time that a woman has achieved this signal honor.

The Institute of Colonial Medicine

M. Sarraut, minister for the colonies, presided recently at the graduation exercises of the Institute of Colonial Medicine, when diplomas were conferred on eleven students. This institute, which was founded eighteen years ago, has seen the number of its students constantly increase. During the past year, thirty-two students have received diplomas, only about half of whom were Frenchmen. The other students were drawn from all parts of the world, but chiefly from Colombia and Venezuela.

Importance of the Sense of Smell in Aviators

Dr. Flamme, a member of the army medical corps, has called attention to the value of examining carefully the sense of smell of candidates for an aviator's license. A pilot with an acute sense of smell will be able to detect abnormal odors arising from motor troubles (such as burning oil or rubber). For this reason alone, it is advisable to test carefully the sense of smell. But Flamme holds that a systematic examination of candidates in this regard has other values; anosmia is often associated with affections that will compromise seriously a candidate's aptitude for aerial navigation (affections of the nerve centers, sequels of cerebrospinal meningitis, nasal lesions).

A Protest Against "Healers" of Tuberculosis

For some time past, tuberculosis victims or suspects have been exploited by so-called "healers" (becoming every day more numerous), who offer alleged remedies, vaccines or serums, the mode of preparing which is kept secret. I referred in a previous letter to the widely advertised Gabrilovitch tuberculin, which is offered as "the truly curative and truly specific remedy" (THE JOURNAL, March 3, 1923, p. 640). Quite recently, again, the daily press has created considerable stir by its discussions on the Spahlinger treatment. In view of these facts, the Comité national de défense contre la tuberculose and the Société d'études scientifiques de la tuberculose have become aroused over the unjustified confidence that the public often places in such products. A protest has therefore been signed and published bearing the signatures of Professors Léon Bernard, F. Bezançon, Calmette, Letulle, E. Sergent, Pierre Teissier and others. The signers of the document declare that it is their duty to call attention to the fact that there does not exist at present any remedy, chemical or biologic, or any serum or vaccine, whose effectiveness in the treatment of tuberculosis has been demonstrated. They caution patients against the dangers to which they expose themselves by wasting money and losing precious time in trying therapeutic agents that are useless and often actually harmful; cure or permanent improvement in their condition can be accomplished only under careful medical supervision by appropriate hygienic measures.

The Twenty-Fifth Anniversary of the Discovery of Radium

The twenty-fifth anniversary of the day on which Pierre Curie announced to the Academy of Sciences that, in collaboration with Madame Curie, he had extracted from Bohemian pitchblende a new substance endowed with intense radioactive properties, to which he had given the name "radium," was celebrated recently in the main amphitheater of the Sorbonne. M. Millerand, president of the republic, Bérard, minister of public instruction, Strauss, minister of public health, Appell, rector of the Académie de Paris, many members of the Academy of Sciences, the Academy of Medicine, the University of Paris and the universities of the provinces, and delegates from the universities and scientific societies of Belgium, Spain, Holland, and other countries were present at the ceremonies. Professor Gendreau represented the Canadian branch of the Curie Foundation. Congratulatory letters and telegrams were received by Madame Curie from all parts of the world.

M. Appell, representing the Curie Foundation, gave the opening address. He referred to the fact that developments resulting from the discovery of radium by M. and Madame

Curie have completely revolutionized our conception of the energy of matter; we have been afforded a glimpse into Nature's workshop and that dream of the alchemist—the transmutation of metals. To the researches on uranium of another Frenchman (Henri Becquerel) we owe the blazing of the trail that led to these brilliant results. Modern opinion is to the effect that radioactivity is a general property of matter, and in radium reaches its maximum.

An address was delivered by M. Millerand, in which he referred to the fact that, a few months after the famous communication of Dec. 26, 1898, had been sent to the Academy of Sciences, he had visited the Ecole de physique et de chimie of Paris, where M. and Madame Curie were working. "Never," he said, "shall I forget the impressions made on me by the miserable surroundings, illuminated by the genius of Pierre Curie." M. Millerand closed his address with these words:

> Pierre Curie was torn from the work of science and humanity by a regrettable accident before he could complete his lifework. Madame Curie, fortunately, survived him and has carried on his work and brought it to fruition. France today through me, its representative, gives voice to its admiration and its gratitude. The name of Curie will remain indissolubly connected with the benefits secured through the use of radium in therapeutics. It will be forever associated with the revelations of the ultimate constitution of matter and the atom into which the study of this new substance has already permitted us a glimpse. As an expression of the feelings of France, the government and parliament have acted well in bestowing the life annuity that has been granted to Madame Curie. May she receive our gift as evidence of the deep esteem in which she is held and as a feeble but sincere testimony of the universal enthusiasm, respect and gratitude that go out to her from the hearts of her compatriots.

As mentioned in a previous letter, the life annuity granted to Madame Curie by the French government amounts to 40,000 francs.

ITALY

(From Our Regular Correspondent)

Dec. 23, 1923.

The Ponndorf Cutaneous Antituberculosis Vaccine

Dr. Bianchini, director of the Sanatorio di Careggi, presented recently to the Accademia Medico-Fisica of Florence an interesting communication on several patients with pulmonary tuberculosis who had been treated by vaccination with the Ponndorf cutaneous vaccine. The method of vaccination differs from others in that the vaccine is injected, after scarification of the skin, into the lateral surface of the arm in much the same manner as in vaccination against smallpox. From the standpoint of composition, the vaccine has the peculiarity of being a mixture of all the antigens (bacillary bodies and soluble products) of not only Koch's bacillus but also other bacteria that may be present. Bianchini presented several cases of various degrees of gravity, in most of which, he claimed, a favorable modification was brought about by vaccination performed at variable intervals over a period of several months.

Antituberculosis Vaccination by the Martinotti Method

For some time, experiments have been carried on in our clinics and sanatoriums for the tuberculous (surgical as well as pulmonary) with the method of vaccination introduced by Martinotti, professor of pathologic anatomy at the University of Bologna. The composition of this vaccine is not yet fully known. We have only the information, given by the author, that it contains, among other things, a protein substance derived from a culture of tubercle bacilli, which, when introduced into the organism, functions as an antigen, causing the production of specific antibodies and active immunity. But in addition to the production of specific antibodies, the Martinotti vaccine seems to activate the cellular exchanges of the organism, possibly through stimulation of the endocrine glands.

The best method of administering the vaccine has been found to be through deep injections in the gluteal region of progressive doses at intervals of five days, commencing with 0.1 c.c. and increasing the dose up to 2 c.c. There is almost always a general reaction accompanied by fever. Those who have experimented with the vaccine report numerous cases that have been favorably influenced by the Martinotti method. Body weight increased, owing mainly to increased muscular development. There was progressive diminution of the auscultatory signs; the sputum became more fluid; microscopic examination revealed a great decrease in the number of tubercle bacilli, and those observed appeared swollen and fragmented. Encouraging results were noted also in cases of surgical tuberculosis. A course of treatment usually included from ten to twenty-four injections. In the cases in which clinical symptoms disappeared, a definite cure could usually be regarded as assured, though sometimes a recrudescence furnished indications for a second course of vaccine treatment.

The Fifth Italian Congress of Medical Roentgenology

The fifth Italian Congress of Medical Roentgenology, held recently in Palermo, was especially noteworthy for the large attendance and the interesting exhibits of the newer roentgenologic apparatus. Professor Gortan reviewed the direct methods for the introduction of gases into body cavities that have no external outlet, such as the peritoneum and cerebral ventricles. He described twenty cases in which he had performed encephalography, illustrating with lantern slides.

Another communication was presented by Professor Boidi, who discussed various aspects of pyelography and roentgenographic examination of the bladder and ureter by means of injections of solutions of potassium iodid.

The next congress will be held at Trieste, and among the subjects on the program is "Roentgenotherapy of the Endocrine System," a topic that will probably arouse lively interest.

BELGIUM

(From Our Regular Correspondent)

Dec. 22, 1923.

Tuberculosis in Luxemburg

Now that the collection of customs at the frontier between Belgium and Luxemburg has been abolished, it would seem desirable for the social organizations of the two countries to cooperate more closely and more efficiently. I have already discussed the manner in which Belgium has organized its campaign against tuberculosis. J. Parisot has outlined in a recent article the plan of organization in Luxemburg, where the work is mainly in the hands of the Ligue nationale luxembourgeoise contre la tuberculose, although the public authorities also take part. The plan of action is covered by: (1) The establishment of dispensaries, sanatoriums and other antituberculosis institutions; (2) the founding of societies for the preservation of child life (open-air wards, free-milk stations, etc.); (3) the granting of aid to patients; (4) the organization of popular lecture courses, addresses and exhibits on the various aspects of tuberculosis and the best means of combating and preventing it, and (5) the detection and supervision of patients to prevent contagion. Since the war, the league has increased its activity, organizing new dispensaries with visiting nurses; creating a sanatorium for tuberculous women, and organizing vacation outings for children predisposed to the disease. By 1922, eight dispensaries, two sanatoriums and one central bacteriologic laboratory had been established.

Cancer as a Disease of the Organism

In an address before the Royal Academy of Medicine of Belgium, Dr. Bayet analyzed a series of well defined cases,

which are becoming more and more numerous, in which cancer may be considered, from clinical observation and experimentation, as the consequence of a previous alteration of the entire organism. Bayet apparently is opposed to the narrow and as yet unproved doctrine of a purely irritative pathogenesis, such as was postulated by Virchow and is still accepted by the majority of students of cancer. The experience and reputation of the author of this communication give weight to his opinion. Bayet believes that the general modification of the organism that precedes the onset of cancer is due to intoxication by arsenic. According to his observations, it appears that in order to produce this state of chronic arsenic poisoning, arsenic must be introduced into the organism in very minute quantities for a prolonged period. Present experience does not seem to indicate that the large quantities of arsenic injected into the system in the form of arsphenamins in the treatment of syphilis have a cancer-producing action. It is the minute quantities that are most effective—doses that penetrate the cells in "ionic" quantities, as it were—provided their action is prolonged.

The slow impregnation of the organism by extremely minute quantities of arsenic, the possibility of an action of the metal on cellular metabolism and nuclear division, and the possibility that these minute quantities of arsenic impregnating the cells may act as resonators to external influences are questions that merit serious consideration. These new views are in close conformity with recent investigations that have shown the influence on cellular metabolism of ionic quantities of metals introduced within the cells.

The question also arises whether the time has come to push this idea still further and to assume that possibly other metals, also in minute particles, fixed in the protoplasm of the cells, may have a cancer-producing action comparable to that of arsenic. That remains for the future to reveal; it is premature to conjecture what researches in this direction may unfold, but certainly we must carry on investigations along this line.

Education of the Public

With the view to educating the public in matters not treated in the general university curriculums, an institute of higher studies has been organized by private initiative under the chairmanship of M. Guillaume De Greef, with the collaboration of Bordet, Brachet, Errera, Lameere, Massart, Zungz, Zwaerdemaker and others. There will be a section of natural science, in which instruction will be given in general biology, anatomy, embryology, physiology, pathology, anthropology, zoology, physical geography and paleontology.

Gasserian Ganglion Radicotomy

Dr. De Beule of Ghent, the advocate in Belgium of dividing the roots centrad to the gasserian ganglion, has recently presented to the Société belge de chirurgie a communication in which he reports the operative results of a new series of cases. He has performed this operation fifty-five times, the age of the patients ranging from 27 to 68. In only three cases were there anatomic lesions (a tumor at the cerebellopontile angle; two tumors at the base of the brain); in the other cases, primary neuralgia was present, involving the superior and inferior maxillary nerves (ten cases) or the superior maxillary and the ophthalmic divisions or only the inferior maxillary (nine cases) or only the ophthalmic nerve (one case). In forty-nine of the fifty-five cases, other modes of treatment had been previously tried; nineteen patients had undergone peripheral operations.

The operation requires from thirty to seventy-five minutes, depending on the relative ease with which the meningeal artery can be ligated and the dura mater can be detached. Only two of the operations resulted fatally. In one case, hemiplegia was induced through compression of the internal carotid artery. Transient paralysis of the oculomotor nerve occurred rather frequently, and occasionally unilateral facial paralysis. Trophic affections of the eye, although more rare than in gasserectomy, occur nevertheless in 20 per cent. of the cases. They might possibly be prevented by tarsorraphy. The neuralgia has always been permanently relieved (from six months to twelve years). The corneal reflex, when immediately abolished, has never returned; hemifacial anesthesia retrogresses slowly.

The Red Cross in the Congo

The general statutes of the Red Cross Society of Belgium provided for the organization of a branch in the colonies. The Red Cross Society of the Congo has now been organized, and a complete program, both for peace and for war, has been set up. A special committee of investigation has been appointed to make a complete report; M. Orts is chairman of the committee.

Prophylaxis Against Trypanosomiasis in the Congo

Before the Société royale des sciences médicales et naturelles of Brussels, M. Schwetz reported recently the results of the campaign of prophylaxis against trypanosomiasis, or the African sleeping sickness. In three (of the eight) regions thus far reexamined, after the application of these measures, the results were as follows:

THE BULUNJU REGION

Percentage of persons affected on first examination	12.2
Percentage of persons affected on second examination	3.3

THE KONDALE REGION

Percentage of persons affected on first examination	5.0
Percentage of persons affected on second examination	1.0

THE KIKWIT REGION

Percentage of persons affected on first examination	12.8
Percentage of persons affected on second examination	9.9
Percentage of persons affected on third examination	6.0

Medicolegal Identification of Inks

A new method of establishing the identity of inks, in connection with medicolegal investigations, has been announced by Dr. De Laet in an address before the Société de médecine légale of Belgium. De Laet has established that very dilute solutions of identical quantities by weight of inks of various origin have different electric conductivities. This specific property is especially well marked if the solutions are examined one, twenty-four and forty-five hours after the ink and water are brought into contact. This method, which is much more sensitive than chemical tests, is applicable to the examination of handwriting.

Epidemic Encephalitis

In several letters I have referred to the studies and communications of Dr. Van Boeckel, as presented to various medical societies, on the subject of epidemic (lethargic) encephalitis. In collaboration with Drs. Bessemans and Nelis, Van Boeckel has now published a comprehensive monograph on this subject. This work is up to date, and the book contains a complete bibliographic index.

Congress of Deaf Mutes

On the occasion of the fifteenth anniversary of its foundation, the Association of Deaf Mutes of Brussels organized an international congress of the various societies of deaf mutes. This congress passed resolutions whose *mute* appeal should not fall on *deaf* ears. The deaf mutes request that they no longer be treated as without the pale of social life, and demand that schools for deaf mutes be given official recognition. The congress voted to establish a federation of the societies of deaf mutes.

BERLIN

(From Our Regular Correspondent)

Dec. 28, 1923.

Physicians and the Health Insurance Societies

Since my last report, no progress has been made toward a settlement of the controversy between physicians and the health insurance societies. A meeting of the federal committee before which the arguments of the representatives of both parties are to be presented has not been called. The executive committee of the Leipzig League has announced that several more provisions contained in the new decrees must be abolished. For example, in spite of all later changes in the provisions, the executive committee of a health insurance society has the right to pass judgment on the activities of physicians with respect to their lawfulness. Not until the committee of control convenes do the physicians get a chance to be heard. But this committee is composed chiefly of laymen, so that the latter can easily outvoice the medical members. For the so-called "first warning," which is the first step taken when a physician is to be disciplined, an official of the health insurance society serves as the mouthpiece, and the physician has no legal remedy with which to combat it. The decision of the committee of control is final, although no persons with legal training serve on the committee. It can dismiss a physician for an indefinite time; formerly, the ordinary courts of law had the power to decide whether there was a "good and sufficient reason" for a physician's dismissal. The new decrees now under contest practically eliminate the free choice of physician. The executive committee of a health insurance society can prevent the admission of new physicians to the panel without assigning reasons for this action. On the other hand, we have no adequate means of compelling the admission of physicians, even when the prescribed quota has not been selected. In the formation of districts presided over by one or more physicians, the physicians' committee is entirely dependent on the executive committee of a health insurance society or on the league of health insurance societies. In the case of disputes about medical fees, the physicians are at the mercy of the health insurance societies. The organization founded to aid physicians in securing adequate medical fees has been unable to function satisfactorily. The Hartmann League seems paralyzed, and we are back in the position we were in before the league was founded. After expiration of a contract, the panel physicians are forced to continue to serve under the same conditions as before. The loose application of Paragraph 370 makes it possible for the executive committee of a health insurance society to use the abolishment of medical assistance and the substitution of cash benefits as a weapon against panel physicians who for personal reasons (political or nonessential) have incurred the ill will of the officials of the society.

According to a published statement of the executive committee of the Physicians' League of Greater Berlin, the conditions imposed by the representatives of the medical profession in the federal ministry of labor as a tentative basis for the resumption of contract relations with the health insurance societies are as follows: (1) assurances that, in the future, before laws are drafted that concern physicians, the latter will be consulted; (2) abolition of the recent decree concerning medical assistance to be given members of health insurance societies; (3) restoration of the former contract conditions, together with the discontinuance of all lawsuits and the cancelation of disciplinary measures taken against physicians. On Point 1, the federal ministry of labor gave satisfactory assurances, which were entered in the records. With reference to Point 2, the ministry ruled that, for a period of four weeks, the committees of control, provided for in the decree on medical assistance to members of health insurance societies, should be held in abeyance. In case the federal committee formulates recommendations to that effect, the decree pertaining to medical assistance to members of health insurance societies will be annulled. As regards Point 3, both parties to the controversy were agreed that disciplinary penalties growing out of circumstances that had arisen during the period of the controversy should not be upheld or enforced by either party, and that all lawsuits that had been instituted by reason of the controversy should be discontinued. With reference to the question of restoring former contract conditions, the representatives of the health insurance societies present declared that they were willing to place the question at once before their societies and to recommend that a reply be sent to the federal ministry of labor by December 30.

Contrary to the spirit of the proposed settlement, however, the health insurance societies have inserted in the large Berlin dailies, and also in the medical journals, both open and blind want ads, through which they are endeavoring to secure physicians who will treat members on a contract basis during regular office hours and also at special dispensaries of the health insurance societies. This has caused a great stir in medical circles. The physicians regard it as a violation of the understanding reached, Dec. 21, 1923, and consequently consider themselves free to take whatever action they see fit. If the leagues of the health insurance societies should actually engage physicians and establish dispensaries, it is not at all unlikely that the physicians will throw on the leagues all responsibility for medical attendance and will confine their medical activities to the treatment of the most urgent cases.

Conditions Among Berlin School Children

The Berlin authorities have published the results of an inquiry instituted in six boys' and six girls' schools of the "Old Berlin" district. Following are the questions and replies: 1. How many children came to school, on the date set for recording, without having had a warm drink of coffee, soup or the like? The reply was, 16.5 per cent. 2. How many children had no bread for their early breakfast? . . . 8.38 per cent. 3. How many children brought in the morning no lunch to eat at recess? . . . 6.38 per cent. 4. How many children had, on the day previous to the set day, no warm meal? . . . 5.66 per cent. 5. How many children had, the day before the set day, only *one* warm meal? . . . 31.19 per cent. 6. How many children had on shoes that were so worn as to furnish only inadequate protection? . . . 15 per cent. 7. How many children were wearing under clothing or outer garments that were badly worn or inadequate? . . . 16.34 per cent.

Marriages

GEORGE BLIGHT HARRISON, Fredericksburg, Va., to Miss Florence Kimbrough Jackson of Lynchburg, Dec. 15, 1923.

ARCHER A. WILSON, Oxford, N. C., to Miss Amorette E. Barker of Richmond, Va., in December, 1923.

HORACE ORLANDO BELL, Richmond, Va., to Mrs. Alice Arlina Streit of New York City, recently.

HENRY S. BROWNE, Tulsa, Okla., to Miss Dorothy Malone of New Orleans, recently, at Tulsa.

GLOVER HANCOCK COPHER to Miss Edith Marjorie Hulsizer, both of St. Louis, January 12.

ENRICO ALFREDO LEOPARDI to Miss Helen C. Clausi, both of Old Forge, Pa., Nov. 10, 1923.

CYRUS E. HAWKS to Miss Dorothy Ellen Arnold, both of Richmond, Va., Dec. 7, 1923.

HENRY B. BOLEY, Brooklyn, to Miss Reta B. Bassell of New York City, January 6.

Deaths

Luther Emmett Holt ✠ New York; well known authority on diseases of children, died of heart disease, January 14, aged 68, while in Peking, China, where he had gone to deliver a series of lectures at the Union Medical College. Dr. Holt was born in Webster, New York, in 1855. In 1875, he received his Bachelor Degree from the University of Rochester, and three years later was graduated from the Medical Department of Columbia College, now College of Physicians and Surgeons of Columbia University. He received also the honorary degrees of LL.D. from the University of Rochester, and Sc.D. from the Columbia and Brown universities. After practicing in New York City for several years, he became professor of diseases of children from 1890 to 1901 at the New York Polyclinic, and from 1901 until the time of his death, at the Columbia University College of Physicians and Surgeons. At the time of his death he was physician-in-chief at the Babies' Hospital, a member of the board of directors and secretary for the Rockefeller Institute for Medical Research, and trustee of the University of Rochester. He was also a member of the staffs of several other New York institutions, of the Association of American Physicians, retiring president of the American Pediatric Association, a trustee of the New York Academy of Medicine, and vice president from its beginning of the American Child Health Association. Professor Holt was especially well known as the author of a book for the public, "The Care and Feeding of Children," which appeared in twelve editions and sold into the hundreds of thousands of copies. He was also the author of a standard text on "The Diseases of Infancy and Childhood," and from its beginning, a member of the editorial board of the *American Journal of Diseases of Children*. In his death, the medical profession loses a conspicuous leader in the practice of pediatrics and a physician who presented to the public the best efforts of the medical profession for the care of the young.

Frederick Gwyer, New York; Medical Department of the University of the City of New York, 1883; member of the New York Surgical Society; formerly professor of operative and clinical surgery at the Cornell University Medical College, New York; for eleven years superintendent of Lincoln Hospital; on the staffs of the Bellevue and Beth Israel hospitals; aged 68; died recently, following an operation.

Percy Kendall Holmes, Lexington, Ky.; Bowdoin Medical School, Portland, 1916; member of the Kentucky State Medical and the Southern Medical associations; head of the department of hygiene and public health, University of Kentucky, Lexington; president of the Kentucky Physical Education Association; aged 44; died, January 8, following a long illness.

Joseph Wilson Dean, Pond, Mo.; St. Louis College of Physicians and Surgeons, 1897; member of the Missouri State Medical Association; served in the U. S. Army, Aviation Corps, in France and England, with the rank of captain, during the World War; aged 48; died, January 5, of pneumonia, following an appendectomy.

Edward Marwick Plummer ✠ Boston; Dartmouth Medical School, Hanover, N. H., 1882; professor of otology at the Tufts College Medical School, Boston; member of the American Otological Society and the New England Otological and Laryngological Society; on the staff of the Deer Island Hospital; aged 67; died, January 3.

Daniel S. Woodard ✠ Aurora, Neb.; College of Physicians and Surgeons of St. Joseph, Mo., 1882; formerly member of the state legislature; at one time superintendent of the Nebraska Hospital for the Insane, Lincoln, and the Hastings State Hospital, Ingleside; aged 75; died, Nov. 28, 1923, of myocarditis.

Thomas Burke Murphy, Lynn, Mass.; Middlesex College of Medicine and Surgery, Cambridge, 1920; served in the M. C., U. S. Army, during the World War; on the staff of the Lynn Hospital; formerly on the staff of the Mercy Hospital, Springfield; aged 27; died in December, 1923, of heart disease.

William Dunn Powell, Hopkinsville, Ky.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1892; member of the Kentucky State Medical Association; on the staff of the Western State Hospital; aged 64; died, January 5, of valvular heart disease.

Elbert H. Smith, Lakeview, Ore.; University of Arkansas Medical Department, Little Rock, 1898; Barnes Medical College, St. Louis, 1899; county judge; president of the Commercial National Bank and the chamber of commerce; aged 50; died, January 2, of tonsillitis and septicemia.

Roscoe Neely Jackson, Dover, Idaho; Long Island College Hospital, Brooklyn, 1880; formerly member of the state legislature; for four years superintendent of the Idaho Insane Asylum, Blackfoot; aged 67; was accidentally drowned in the Pend Orielle River at Laclede, recently.

Horace A. Kinnaman, Keokuk, Iowa; College of Physicians and Surgeons, Keokuk, 1882; Jefferson Medical College of Philadelphia, 1884; physician of Lee County and lecturer at St. Joseph's Hospital; aged 76; died, Dec. 5, 1923, of carcinoma of the sigmoid.

Moses Seligman Kakeles ✠ New York; Medical Department of Columbia College, New York, 1884; on the staffs of the Lebanon Hospital, New York City, and the Rockaway Beach (N. Y.) Hospital; aged 61; died, January 1, of pneumonia.

Robert Henry Lee, South Hartford, N. Y.; University of Vermont College of Medicine, Burlington, 1904; member of the Medical Society of the State of New York; aged 44; shot himself, January 7, while temporarily insane.

Albert Chapman Lancaster ✠ Fieldale, Va.; University of the South Medical Department, Sewanee, Tenn., 1900; served in the M. C., U. S. Army, during the World War; aged 48; died, Dec. 30, 1923, following a long illness.

William F. Todd, La Junta, Colo.; St. Louis College of Physicians and Surgeons, 1921; on the staff of the Atchison, Topeka and Santa Fe Railroad Hospital; aged 33; died, Dec. 27, 1923, following an appendectomy.

Henry McCreary, New Concord, Ohio; Starling Medical College, Columbus, 1866; formerly professor of physiology at Muskingum College, New Concord; Civil War veteran; aged 87; died, Dec. 14, 1923, of senility.

William Randolph Hammond, Cortland, N. Y.; Eclectic Medical College of the City of New York, 1885; Wisconsin College of Physicians and Surgeons, Milwaukee, 1899; aged 74; died, Oct. 24, 1923, of senility.

William Milligan Ferguson, Nevins, Ill.; Jefferson Medical College of Philadelphia, 1883; member of the Illinois State Medical Society; formerly county coroner; aged 62; died, January 12, of heart disease.

Martin Cavana ✠ Sylvan Beach, N. Y.; Bellevue Hospital Medical College, New York, 1872; proprietor of the Oneida Private Hospital and Training School for Nurses, where he died, January 7, aged 74.

Samuel W. White ✠ Franklin, Tenn.; University of Tennessee College of Medicine, Memphis, 1901; aged 45; died, Dec. 29, 1923, at St. Thomas Hospital, Nashville, of abscess of the prostate and septicemia.

Thomas Patterson Devlin, Balfour, B. C., Canada; L.R.C.P. and S., Edinburgh, Scotland, 1882; served as major with the Royal Army Medical Corps during the World War; aged 66; died, Oct. 30, 1923.

Franklin Waters Hains, Petersburg, Va.; University of Maryland School of Medicine, Baltimore, 1888; member of the Medical Society of Virginia; aged 59; died, Dec. 30, 1923, of heart disease.

Godfrey Ryder ✠ Malden, Mass.; Medical School of Harvard University, Boston, 1880; on the staffs of the Malden Hospital and the Home for the Aged Persons; aged 69; died, Dec. 28, 1923.

Frederick Francis Owens, Ely, Nev.; Columbia University College of Physicians and Surgeons, New York, 1896; member of the Nevada State Medical Association; aged 51; died, Nov. 23, 1923.

D. R. Gist, Sparta, Tenn.; University of Tennessee College of Medicine, Memphis, 1888; member of the Tennessee State Medical Association; aged 70; died, Dec. 12, 1923, of carcinoma.

William Riley Gifford, Toledo, Ohio; University of Michigan Medical School, Ann Arbor, 1868; Civil War veteran; aged 79; died, January 1, at Kansas City, Mo., of pneumonia.

George Thomas Darden, Blanton, Miss.; Louisville (Ky.) Medical College, 1881; member of the Mississippi State Medical Association; aged 65; died, in December, 1923.

Gabriel Villaronga, Ponce, Porto Rico; University of Barcelona, Spain, 1872; member of the Medical Association of Porto Rico; aged 72; died, Dec. 15, 1923.

Edward W. Ragsdale ✠ La Junta, Colo.; Marion-Sims College of Medicine, St. Louis, 1896; aged 53; died suddenly, Dec. 9, 1923, of hemorrhage of the stomach.

William H. Strother ✠ Owensboro, Ky.; University of Louisville (Ky.) Medical Department, 1892; aged 54; died, Nov. 6, 1923, of carcinoma of the liver.

Martin W. Goldsborough, Cambridge, Md.; University of Maryland School of Medicine, Baltimore, 1896; aged 53; died, January 11, of cerebral hemorrhage.

Edwin Augustus Sell, Springfield, Ill.; Medical Department of the University of the City of New York, 1888; also a druggist; aged 60; died, January 5.

Gustav Dresel ✠ San Francisco; University of Frankfort-on-Main, Germany, 1882; aged 67; died, January 1, at the Franklin Hospital, of cholecystitis.

Andres Catanjal y Garcia, Tarlac, Philippine Islands; University of St. Thomas Medical Department, Manila, 1891; died recently, of heart disease.

William Franklin Boylan, Bridgeport, Calif.; Eclectic Medical Institute, Cincinnati, 1891; aged 55; died, Nov. 26, 1923, of aneurysm of the aorta.

Emily Sibley Colt, Mount Washington, Mo.; Hahnemann Medical College and Hospital, Chicago, 1881; aged 84; died, January 1, of pneumonia.

Jairus B. Gardner, Manilla, Iowa; State University of Iowa College of Medicine, Iowa City, 1882; also a druggist; aged 68; died, Dec. 26, 1923.

Israel Jarius Elihaf Shapira, Boston; Baltimore (Md.) University School of Medicine, 1897; aged 60; died, Dec. 26, 1923, of heart disease.

Benjamin Harry Southworth, Schoolcraft, Mich.; Rush Medical College, Chicago, 1903; aged 45; died, January 3, of diabetes mellitus.

Peter Parrish White ✠ Needham, Mass.; University of Vermont College of Medicine, Burlington, 1883; aged 62; died in December, 1923.

John A. McDonald, Century, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1899; aged 58; died in December, 1923.

M. Francis Drury, Gloversville, N. Y.; Albany (N. Y.) Medical College, 1887; aged 61; died suddenly, January 11, of heart disease.

William D. Evans, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1881; aged 67; died, Dec. 20, 1923.

Charles Augustus Murphy, Boston; Tufts College Medical School, Boston, 1904; aged 50; died, Dec. 26, 1923, following a long illness.

George Torian, Brookneal, Va.; Medical College of Virginia, Richmond, 1881; aged 63; died, Dec. 15, 1923, of septicemia.

John Hunter Adair ✠ Owatonna, Minn.; Rush Medical College, Chicago, 1883; aged 65; died, January 6, of tumor of the brain.

George Sultan ✠ Chicago; Baltimore (Md.) Medical College, 1893; aged 62; died suddenly, January 15, of angina pectoris.

Nicola Rubertone, Bristol, Pa.; University of Naples, Italy, 1898; also a druggist; aged 50; died, January 1, of heart disease.

Addison Coffea James, Springfield, Ill.; Rush Medical College, Chicago, 1880; also a druggist; aged 70; died, January 13.

James Monroe Cooper ✠ Detroit; University of Michigan Medical School, Ann Arbor, 1903; aged 46; died, Dec. 30, 1923.

Frank Helton Morrical, Beaumont, Texas; Rush Medical College, Chicago, 1875; aged 83; died, Dec. 4, 1923, of heart disease.

Albert R. Black, Kahoka, Mo.; Missouri Medical College, St. Louis, 1875; aged 73; died, January 3, of heart disease.

Eva G. Condon, St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1886; aged 72; died, Nov. 9, 1923.

George W. Luster, Edwards, Miss.; Memphis (Tenn.) Hospital Medical College, 1882; aged 61; died, Dec. 13, 1923.

Samuel L. Henry, Morganfield, Ky.; Louisville Medical College, 1878; aged 70; died recently, of heart disease.

James Purdon ✠ Edmore, Mich.; Jefferson Medical College of Philadelphia, 1897; aged 53; died, Dec. 28, 1923.

Leon Miesse ✠ Cherokee, Kan.; Medical College of Ohio, Cincinnati, 1880; aged 65; died, January 3.

J. Almus Gardner, Gardner, Tenn. (years of practice); aged 97; died, Dec. 6, 1923, of senility.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

SPECTRO-CHROME THERAPY

"The Latest Revelation in the Healing Art"

"If the next issue of THE JOURNAL isn't already compiled, I believe a word about the 'Spectro-Chrome Institute' might be apropos. Said Institute is headed by Colonel Dinshah P. Ghadiali, M.D., M.E., D.C., Ph.D., LL.D. and, I suppose, B.V.D., with headquarters at 2401 N. Broad St., Philadelphia."

Thus writes Dr. Harry J. Powers of Los Angeles, one of the latest of many correspondents to inquire about the fearfully and wonderfully named Dinshah P. Ghadiali and his "Institute" and "Therapy."

Colonel Dinshah P. Ghadiali,
M. D., D. C., Ph. D., LL. D., &c.
Metaphysician and Psychologist
Ex-Commander New York Police Reserve Air Service
The Originator of Spectro-Chrome Therapy

Photographic reproduction (greatly reduced) of part of the first page of a circular sent out by Dinshah P. Ghadiali who claims to have "Conceived, Originated, Developed, Applied and Copyrighted" "Spectro-Chrome Therapy." The circular contains what purports to be a "life sketch" of Ghadiali.

Nothing pays so well nowadays as floating a new freak therapy. If the thing is worked with finesse and plausibility, the public will "eat it up." Moreover, venal ignoramuses in the various drugless cults will espouse with enthusiasm any new "system" that is widely advertised and can be practiced without violating the Medical Practice Acts of the various states. No better example of this fact can be found than the way in which osteopaths and chiropractors took up the Abrams cult. Then, too, there are, in the medical profession, a few honest but uncritical visionaries and faddists who will wax enthusiastic over any new modality however weird.

For some years past we have been told of the diagnostic and therapeutic possibilities of colors. We had, for instance, the "Bio-Dynamo-Chromatic-Diagnosis" of George Starr White and the "Chromo Therapy and Diagnosis" of the century's shrewdest exponent of modern charlatanism, the late Albert Abrams. Now comes into the field Colonel Dinshah P. Ghadiali, exponent of "Spectro-Chrome Therapy" and

founder of the "Spectro-Chrome Institute." Ghadiali has an appalling list of titles. The leading one, for his present purpose at least, is that of "M.D." So far as the records of the American Medical Association show, and they are the most complete extant and based on official data, no man by the name of Dinshah P. Ghadiali has ever been graduated by any reputable medical college nor licensed to practice medicine in any state in the Union. One wonders whether Ghadiali's other "degrees" rest on as flimsy a foundation.

In part of his advertising paraphernalia Ghadiali sends out reprints of a "life sketch" of himself, written in the third person, but claimed to be the "most accurate report" ever published. According to this, he was born in 1873 in India. When he was 2½ years old he attended primary school and was in high school when he was 8 years old! More marvelous still, at the tender age of 11 he "acted as assistant to professor of mathematics and science at Wilson College, Bombay." When he was 13 he took the Bombay University examination and at 14 he "began the study of medicine." After that he was in succession a "consulting electrical engineer," a "medical electrician," a "stage manager," the inaugurator of an "Electro-Medical Hall" for the treatment of disease by color waves "and other drugless methods in conjunction with his regular medical and surgical practice." Subsequently he was an insurance agent, a newspaper publisher, the founder and chairman of a soft drink company, the vice-president

Photographic reproduction (reduced) of the letterhead of the "Spectro-Chrome Institute."

and general manager of an "Anti-Forgery Electric Pen Company," the assistant manager of a nut and fruit company, the manufacturer of the "Dinshah Engine Tester," the organizer and president of "Dr. Dinshah P. Ghadiali Inventions Corporation" (which was to market talking motion pictures), the general manager of the "Independent Electrical Supply," the founder of the "Business Psychological Bureau" and many other things too numerous to mention. Finally: "Having perfected and completed one of his life works, Spectro-Chrome Therapy, his original method of treatment of diseases by attuned color waves, he founded the Spectro-Chrome Institute."

Nor is this all. The man fairly drips with erudition. He tells us that "among other honors" he holds the following degrees: "Doctor of Chiropractic," "Doctor of Philosophy," "Doctor of Legal Law" (*sic!*). He is:

"Fellow and Ex-Vice-President, Allied Medical Associations of America."
"Member and Ex-Vice-President, National Association of Drugless Practitioners."
"President, All Cults Medical Association."
"President, American Association of Spectro-Chrome Therapists."
"President, American Anti-Vivisection Society."
"Member Anti-Vaccination League of London."
"Member American Association of Orificial Surgeons."

And last, but not least, he admits that he is a "Fellow of the American Geographical Society and a host of other scientific associations too numerous to mention."

During the war Ghadiali seems to have received a commission in the New York Police Reserve. Most of his advertising bears a picture of him in full regalia.

WHAT IS SPECTRO-CHROME THERAPY?

"Spectro-Chrome Therapy" we are told is "The Latest Revelation in the Healing Art." It consists in the "restoration of the human Radio-Active and Radio-Emanative Equilibrium by Attuned Color Waves." Here is the thesis developed and commercialized by Ghadiali: Every element exhibits a preponderance of one or more of the seven prismatic colors; 97 per cent. of our body is composed of the four elements, oxygen, hydrogen, nitrogen and carbon; the preponderating color wave of these four elements are blue, red, green and yellow, respectively; the human body is responsive to these four "color wave potencies." In health our four colors are properly balanced; when they get out of balance we are diseased; *ergo*, to cure disease administer the lacking colors or reduce the colors that have become too brilliant.

Part of Gladiali's paraphernalia is a chart describing the "Spectro-Chrome Therapeutic System." From this we learn that Green light is a pituitary stimulant, a germicide and a muscle tissue builder. Yellow light is a digestant, an anthelmintic and a nerve builder. Red is a liver energizer, a caustic and a haemoglobin builder. Violet is a cardiac depressant; Blue is a vitality builder; Indigo is a hemostatic; Turquoise, a tonic; Lemon, a bone builder; Orange, an emetic; Scarlet, a genital excitant; Magenta, a suprarenal stimulant, and Purple an anti-malarial. In addition, there is "a Spectro-Chrome Area Chart," which divides the body into various areas, each of which has its own number. The disciple is told that the "attuned color waves" should be applied to the bare skin as clothing will intercept them. In giving the "systemic treatment" which, from the testimonials, seem an important feature, the "color wave" is applied to the entire nude body, both front and back. For local treatment, the "color wave" is applied to the area that is designated by the number given in the chart.

"Spectro-Chrome Therapy," says Ghadiali, will "meet every condition of ill health." Like our friends the Eddyites, however, he recognizes and admits the limitation of his therapy in surgical cases. As all the Colonel's pictures show him wearing spectacles, one presumes also that "attuned color waves" are valueless for correcting errors of refraction.

SPECTRO-CHROME THERAPY AS A PATENT MEDICINE

"Spectro-Chrome Therapy," according to the Colonel, is "suited for intelligent self-use." It seems that such crude things as drugs "quickly upset the nervo-vital balance of persons of high mental and spiritual development." The mental and spiritual high-brow who is feeling off-color should, therefore, purchase the "Standard Spectro-Chrome outfit." This can be obtained for a mere $30 and consists of a steel hood, a lamp bracket, an electric light bulb, 15 feet of cord, an attachment plug, and—mystery of mysteries—"special attuned color slides, chart and full course of instructions." We learn further that this *vade-mecum* is "obtainable direct from the inventor [Colonel Dinshah P. Ghadiali, "M.D.," etc.] only."

Thus does Ghadiali appeal to that vast field, the hypochondriac public. But he endeavors to reach with equal plausibility medical men and the followers of the so-called "drugless cults." Ghadiali goes around the country giving "intensive courses" in "Spectro-Chrome Therapy" and attempts to tie up his disciples in very much the same way as did Albert Abrams. Abrams, it will be remembered, would lease his piece of electrical hocus-pocus, the "Oscilloclast," only to those who would sign a contract not to open this hermetically sealed device. Ghadiali will give courses only to those who, in addition to paying $100 (cash in advance) will sign a statement they will never give out, print, or publish, either directly or indirectly, any of the notes taken during the course, nor any part of the "instructions, charts, diagrams, processes and the like." Of course, there is a "diploma" granted at the end of the "course" and the disciple is permitted to call himself a "Spectro-Chrome Therapist" and put after his name the magic letters "S. C. T."

The complete course, it seems, occupies two weeks of six days each. No visitors are admitted "without special permission in each case and even then only once." As a business man, Ghadiali seems to rank high. We learn that "bulbs, charts and similar supplies may be had for cash" and Ghadiali emphasizes that his institute does not maintain a credit department, that all transactions are net cash with order and that the Institute's responsibility ceases with shipment. He says further that while personal checks will be accepted

"the orders do not go out [Italics in the original.—ED.] until the checks are cashed and payment received through the banks." Ghadiali then adds:

"I very much regret the obvious inconvenience to my esteemed and beloved 'friends,' but I shall thank them cordially to let me know what I should do otherwise when my safe carries in a special drawer under double lock and key several thousand dollars of utterly worthless (un)negotiable paper. Bless your kind heart, please find someone else to practise your arts; why pick on me?"

Before leaving the subject of the Ghadiali "courses" in Spectro-Chrome Therapy, reference should be made to the equipment which seems to be necessary before one is able to "relieve suffering humanity" by the Spectro-Chrome method. First, there seems to be the "Graduate Equipment" which comes at $425. Then there are various "supplies and extras." These consist largely in electric light bulbs ranging from 100 to 1000 Watts, iris diaphragms and the "attuned color slides." Then there are various charts, one dealing with the "Spectro-Chrome Acoustic Therapeutic System," another with the "Universal Mirror (showing Cosmic Evolution)" and the impressive one on "Occult Operation of the Great Sympathetic Nervous System."

THE TESTIMONIALS

Like every cult of any pretensions "Spectro-Chrome Therapy" has a house-organ. It is called *Spectro-Chrome* and is devoted to the "Restoration of the human Radio-Active and Radio-Emanative Equilibrium (Treatment of Dis-eases) by Attuned Color Waves." Ghadiali's house-organ contains the usual number of testimonials and these are very funny or very tragic, according to the way you look at them. *Spectro-Chrome* for March, 1923, contains an article on "Complicated Disorders Set Right by Spectro-Chrome" credited to "Kate W. Baldwin, M.D., F.A.C.S., Senior Surgeon of the Woman's Hospital, Philadelphia." According to this article, Susie T., aged nine years, who was admitted to the Woman's Hospital with a sloughed appendix and peritonitis, developed a pneumonia which was treated by Dr. Baldwin by Lemon, Turquoise and Magenta colored lights. "Susie went home . . . well, fat and happy."

Then we read in the same publication of a patient who was treated for "auto-intoxication"; the Spectro-Chrome Therapist "gave mostly Green and Lemon Waves systemically, with a few local Yellow treatments to encourage the bowel activity." Another patient who had "complained about a severe pain on the right side of the abdomen" was given "about 6 treatments of the Turquoise Wave." Still another patient suffering from diarrhea, "bowels evacuated about 15 times a day," was cured when put under "Indigo Wave for one hour." Then there is the case of Mrs. J. T. with inflammation of the ovary; cured in eight "treatments" with "Indigo on 10 and 11 for half hour." Miss F. S. with neurasthenia who had tried osteopathy, chiropractic, Eddyism, etc., without deriving any benefit was placed on a vegetarian diet and given "Lemon Waves"; she recovered completely in two months. A man with "hepatic hypertrophy" got well after having "Indigo on 7"; a woman with pulmonary tuberculosis was cured by having "Orange on 17, Lemon systemic." An obese woman with interstitial nephritis was put on "Yellow systemic, Magenta on 18" and in five weeks her waist was reduced 8 inches; no record of what happened to her nephritis. A man with eczema was cured with Green Waves, the same color that cured a patient with chronic gonorrhea. Then there was the constipated patient who "needed something for it; took Yellow and next day had result." "Rheumatism" was helped with four treatments; two of "Green," two of "Lemon systemic." And so it goes.

A cult to be successful must have plausibility. It should have some apparent scientific basis. The Spectro-Chrome fad plays on the public's ignorance of light therapy. The layman has hazy notions of the use of ultraviolet and infra-red rays in medicine. The public knows, too, that heliotherapy has an established—although limited—place in the scientific treatment of certain diseased conditions. The characteristic spectra of the individual elements also are matters of more or less general knowledge. What more plausible, then, to those possessing that small knowledge that is dangerous, that human pathology is due to a lack of balance in the alleged "color wave potencies"—whatever that may mean.

Some physicians, after reading this article, may wonder why we have devoted the amount of space to a subject that, on its face seems so preposterous as to condemn itself.

When it is realized that helpless but credulous patients are being treated for such serious conditions as syphilitic conjunctivitis, ovaritis, diabetes mellitus, pulmonary tuberculosis and chronic gonorrhea with colored lights, the space devoted to this latest cult will not be deemed excessive.

Correspondence

"SOME NEW LINES OF PROGRESS IN CANCER RESEARCH"

To the Editor:—The editorial entitled "Some New Lines of Progress in Cancer Research" (THE JOURNAL, January 5) discusses an article by Dr. J. A. Murray, director of the Imperial Cancer Research Laboratories of London, England. This article appeared in the *Lancet*, July 28, 1923. Murray attempts to show that cancer is the result of cell injury, that it is a degenerative overgrowth somewhat perhaps in the sense of Thiersch and Benicke and later of Oertel. The growth in cancer he attributes to the presence of a growth stimulus liberated when cells are injured. He cites work with the tissue culture as proof for this deduction. What I wish to point out here is that I do not believe that the work with the tissue cultures carried on in this country justifies this deduction. In Murray's laboratory, Drew has shown that embryonic tissue and malignant tumor tissue contain an extractable growth stimulus. Drew has again found this stimulus in kidney left in the incubator for one hour. Extracts of fresh kidney in the cold showed no such stimulating substance. Drew and Murray ascribe the presence of the stimulus in the incubated kidney to autolysis. Autolysis is self-digestion resulting from any tissue injury that disturbs the normal oxygen supply. One hour is not sufficient for true autolysis to take place.

Carrel and I, as early as 1911 (THE JOURNAL, Jan. 7, 1911, p. 32), had noted an active stimulus in these tissues. While Carrel has stated in later articles that stimulating substances are to be found in many adult organs and tissues, I have not been able to confirm his experiments. As I pointed out in 1913, any dilution of the plasma which Carrel used as a medium leads to an increase in the rate of migration and growth. Carrel had failed to control for such dilution. Controlling these factors carefully, it can be shown that active stimuli sufficient in quantity to induce a migration and growth of cells are peculiar alone to actively growing tissue. Such stimuli for growth and migration of cells do not exist in fresh pieces of adult organs and tissue or in the tissue of older embryos. These stimuli develop, however, in these older tissues when they are removed from the body and from their normal circulation but not from their oxygen supply. As early as 1913 (*Tr. Cong. Am. Phys. & Surg.* **9**:77, 1913; *Tr. XVII Internat. Cong. Med.*, Gen. Path. & Path. Anat., London, 1913, p. 217) I had shown that oxygen diffuses only from 0.5 to 0.7 mm. into clots of plasma in quantities sufficient to maintain the oxyhemoglobin in red cells. Into tissue it diffuses somewhat more, but rarely more than from 1 to 1.5 mm. Fragments larger than this size suffer central autolysis. This autolysis liberates products that are distinctly harmful for growth. Again, in 1913, I gave evidence to show that the rate of formation of this growth stimulating substance is proportional to the number of cells present in the fragment and within the range of oxygen diffusion. In later experiments (*Proc. Soc. Exper. Biol. & Med.* **18**:133, 1921), I again showed not only that oxygen is necessary for the development of this stimulus but also that the amount of stimulus formed is directly proportional to the amount of oxygen present. At no time,

however, need the quantity of oxygen be large in amount. Fletcher, several years ago, had shown that muscular contraction may proceed without oxygen. My experiments show that growth may likewise proceed without oxygen when the stimulus is present. It fails in the absence of oxygen when the stimulus is absent. The stimulus can be formed only in the presence of oxygen. There is no evidence whatsoever that this growth stimulus is a product of cell injury. It is a normal product of the cell's metabolism. In high concentration it causes a digestion of the cell. Extracts of these digested cells are food for other cells. In slightly lower concentrations it induces a growth of the cells; at this and higher concentrations the fats as well as proteins are digested in the cultures (Burrows: four papers under heading of Studies on Cancer, *Proc. Soc. Exper. Biol. & Med.* **21**:94-110, 1923; *Missouri State M. J.* **20**:145, 1923).

As I have further shown in these later papers, this stimulating substance is soluble in physiologic sodium chlorid solution and in serum. Growth in the cultures can be inhibited by washing the cells with serum. Actively growing tissues in the body are characterized by a relatively poor blood supply. Either the capillaries are few per unit cell area, or the circulation is sinusoidal in character. This is true for the nail, the wound, granulation tissue, embryonic tissues and for cancer.

Cellular growth, as shown definitely by the cultures, depends on the accumulation of a certain normal product or products of the cell's metabolism. This product or these products are soluble in circulating body fluids. Growth may be inhibited by decreasing the number of cells per unit area or by increasing the vascular supply; in other words, by decreasing the amount of production of the stimulating substance or by washing it away as it is formed. This fact I have found to have quantitative expression in the culture.

The fact that the adult cells, when cut off from their vascular supply and not from their oxygen, may grow in a tissue culture indicates clearly that the important factor which stops growth in the developing animal is the development of intercellular substances and a rich vascular supply. There is no evidence, as Ribbert has clearly pointed out, that this cessation of growth is due to any aging of the cell.

In the light of these facts, cancer may be readily deduced as nothing more therefore than the restoration in any part of the body of those conditions necessary for the cells to grow. In other words, it may result from any condition or substance capable of inducing the development of a dense mass of cells having a relatively poor circulation—conditions suitable for the stimulating substances to concentrate (Burrows: *Tr. Sect. Path. & Phys.*, A. M. A., 1923).

As I have stated above, a low concentration of the stimulus causes migration. It induces the cells to liberate a substance that is an active blood coagulant. This substance decreases the surface tension of cells in the presence of fibrinogen. They migrate along the lines of diffusion of this substance into a plasma clot (Burrows, 1913). Active blood coagulants extractable from these cells are phospholipins, according to Woolbridge and Mills. They are very soluble in certain coal tar products. Mr. Jorstad, working in my laboratory, has shown that coal tar acts to produce cancer in that it attracts cells to it as the fibrinogen attracts them. It thus attracts the cells away from their normal vascular supply and forms dense cell masses suitable for independent growth. The coal tar does not stimulate growth directly (*Proc. Soc. Exper. Biol. & Med.* **21**:67, 1923). I have found that chronic inflammation, various animal parasites, and congenital tumors lead either directly or indirectly to the same formations (Burrows: Studies in Cancer, *loc. cit.*; paper read before the Southern Medical Association, Washington, D. C., Nov. 15, 1923).

Murray's conclusions are, I believe, unjustifiable in terms of any careful analysis of the facts gleaned from the study of body cells grown in vitro, and are out of accord with many of the best biologic facts deduced recently and in older times. Wildiers, in 1902, had already shown that single yeast cells cannot grow in a large bulk of medium. In 1913, I noted that the rate of growth in a tissue culture is proportional to the size and cell density of the fragment, when the size of the fragment is kept within the limits of an active oxygen diffusion. This I have again pointed out clearly in recent articles. Robertson found the same to be true for the growth of paramecium, and in a recent book he has shown that the growth curves of the body are not regular but similar to a reaction suffering autocatalysis.

From the work on the tissue culture, it is evident that growth of body cells depends always on the accumulation of certain soluble products of their metabolism about them. These substances are formed in the oxidation reaction. Cancer need not be considered a degenerative phenomenon. If one is to give an explanation for cancer from the studies of tissue cultures alone, it must be assumed to be the result of a condition capable of establishing a dense mass of cells having a relatively poor blood supply (conditions suitable for maintaining a certain high concentration of certain blood soluble oxidation products about the cells). Our studies of coal tar, other lipoid solvents, chronic inflammation, certain congenital tumors, animal parasites, etc., have confirmed this view.

MONTROSE T. BURROWS, M.D., St. Louis.

"TOXEMIA OF SUPERFICIAL BURNS"

To the Editor:—In THE JOURNAL, January 5, I notice an editorial entitled "Toxemia of Superficial Burns," in which a short review of the paper by Robertson and Boyd of Toronto, published in the *Journal of Laboratory and Clinical Medicine*, October, 1923, appears. In this editorial you state that the findings do not bring us nearer to a successful scheme for antitoxic treatment. While this is undoubtedly true, I should like to call to your attention the fact that the findings have brought us to a successful scheme of treatment, although it is not antitoxic in character.

Robertson and Boyd (Toxemia of Severe Superficial Burns in Children, *Am. J. Dis. Child.* **25**:163 [Feb.] 1923) describe a method of treatment known as "exsanguination transfusion." This treatment is based on the scientific findings outlined in the recent paper in the *Journal of Laboratory and Clinical Medicine*. It is being continually used in the Hospital for Sick Children, Toronto, and has made a spectacular improvement in the mortality statistics in the toxemia of burns. A more extensive report of the results is now being prepared for publication.

I am taking the liberty of writing you on this subject as Dr. Bruce Robertson, the originator of the treatment, died just a year ago and I know that he would have liked to correct any impression that his scientific work did not lead to a plan of treatment to combat the toxemia.

W. EDWARD GALLIE, M.D., Toronto.
Surgeon-in-Chief, Hospital for Sick Children.

DR. A. METZ AND THE HUMAN EYE

To the Editor.—Many of your readers know that the writer, at the request of government officials, recently donated his Ophthalmic Museum to the Army Medical Museum, Seventh and B streets S.W., Washington, D. C.,

The donor wishes to secure data concerning a volume which, apparently, was the first one of its kind to be issued on this side of the Atlantic, viz., "The Anatomy and Histology of the Human Eye," by "A. Metz, M.D., professor of ophthalmology

in Charity Hospital Medical College, Cleveland, Ohio." The book was published by "Office of the Medical and Surgical Reporter, Philadelphia, 1868."

The writer will gratefully acknowledge the receipt of data concerning: (1) Dr. Metz and (2) the Charity Hospital Medical College.

JAMES MOORES BALL, M.D.,
4500 Olive Street, St. Louis.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MANGE NOT TRANSFERABLE FROM DOG TO MAN

To the Editor:—I am interested in a case on which the books in my library do not give me any information. I wish you would either give me the information or refer me to some authority where I can obtain it. Briefly, a veterinary who runs a hospital for domestic animals sold a puppy to a man; a short time thereafter the puppy developed mange. The man and his wife both claim they acquired the disease from the puppy and were seriously injured thereby. They have brought action against the vendor. I have been asked to give expert testimony in the case. I have always been of the opinion the disease was not transferable to the human being. Am I right? Please give me all the light you can on the case, and refer me to any authorities which you know to enlighten me.

M.D., Minn.

ANSWER.—In the experience of animal caretakers, transmission of mange from dogs to man does not seem to occur. This statement, which we have good reason to believe is based on reliable observation, appears to be confirmed by medical writers. Thus, neither Ormsby nor Pusey mentions any instances of transmission of skin diseases from dog to man, in their discussions on *Acarus* or *Demodex folliculorum* or similar organisms. According to Stiles (Osler's Modern Medicine **1**:630, 1907), a recognized authority on the animal parasites of man, the infection with hair follicle mites in man is either direct or indirect from person to person. He does not mention the dog as a source of infection in man. Braun (Animal Parasites of Man, 1906) says that, according to Zürn, the variety of *Demodex* living in the dog may also live on man; but, says Bräun, "nevertheless, no other investigator has reported a similar observation, and attempts at artificial infection have proved negative" (p. 386).

EFFECT OF BROMIDS ON EPILEPSY

To the Editor:—What bad effect might result from the continuous use of the bromids for four or five years in an epileptic patient, aged 18? Would it retard growth or mentality? This patient has taken bromids for four years continually and has been without a seizure for three years. She is underweight and has been out of school for three years and wishes to return. The bromids keep her rather quiet, and I am not familiar with luminal, and hardly dare to stop the bromids.

M.D., Mass.

ANSWER.—The harmful effects of the prolonged administration of the bromids, apart from the skin and gastro-intestinal effects, are gradually increasing dulness, heaviness, torpor and stupidity, with greater self-centering of interest and unintelligence—the group of symptoms that are difficult to distinguish from the so-called "deterioration" of epilepsy. The size of the dose that is necessary to control the fits is probably an important factor in determining the amount of damage that will be done, though there are doubtless individual variations in this respect. As a general rule, it seems wise not to exceed a dose of 45 grains (3 gm.) daily.

Phenobarbital (luminal), in many cases, seems to serve equally well in checking the convulsions and possibly has less tendency to cause mental deterioration than the bromids, though this is not established. Just as with the bromids, dosage is probably an important factor, and must be adjusted to the individual case; usually the dose given varies from ¾ grain to 1½ grains (0.05 to 0.1 gm.) daily, though larger doses are often given. It is best with the omission of the dose on one day in the week, in order to avoid the effects of possible accumulation.

DEATH OF VON VOLKMANN

To the Editor:—What was the cause of Volkmann's death?

R. E. W., M.D., Youngstown, Ohio.

ANSWER.—Richard von Volkmann died of pneumonia in Jena, Germany, Nov. 28, 1889, aged 59 years.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

CALIFORNIA: Los Angeles, February 18-20. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

KANSAS: Topeka, February 12. Sec., Dr. Albert S. Ross, Sabetha.

NATIONAL BOARD OF MEDICAL EXAMINERS: Written Examinations in Class A Medical Schools. Part I, February 13-15, 1924. Secretary, J. S. Rodman, 1310 Medical Arts Bldg., Philadelphia.

NEW YORK: Albany, Buffalo, New York and Syracuse, January 28-31. Ass't, Mr. Herbert J. Hamilton, State Education Bldg., Albany.

PENNSYLVANIA: Philadelphia, January 29-February 2. Prelim. Exam., Mr. C. D. Koch, 422 Perry Bldg., Philadelphia.

VERMONT: Burlington, February 12. Sec., Dr. W. Scott Nay, Underhill.

WYOMING: Cheyenne, February 11-13. Sec., Dr. J. D. Shingle, Cheyenne.

Florida June Examination

Dr. W. M. Rowlett, secretary, Florida Board of Medical Examiners, reports the written examination held at Daytona Beach, June 11-12, 1923. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 58 candidates examined, 41 passed and 17 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Arkansas		(1911)	75
George Washington University Medical School		(1909)	78.5
Atlanta College of Physicians and Surgeons		(1912)	78.2
Atlanta Medical College	(1915) 75.1,	(1916)	81
Emory University	(1917) 75.5,	(1923)	76.2
University of Georgia Medical Department		(1914)	81.1
Chicago College of Medicine and Surgery		(1917)	83.7
Northwestern University Medical School		(1919)	88.6
Rush Medical College	(1886) 80.1,	(1923)*	90.7
Indiana University School of Medicine		(1909)	81.1
Medical College of Indiana		(1904)	78.3
State University of Iowa College of Homeo. Med		(1910)	84.9
Tulane University		(1923)	83.1
College of Phys. and Surgs., Baltimore	(1895) 78,	(1909)	81
University of Maryland		(1903)	75.1
Boston University School of Medicine		(1903)	81.2
Harvard University		(1922)	83
Tufts College Medical School		(1916)	79.1
St. Louis University School of Medicine		(1923)	81.8
Columbia University		(1895)	91
Eclectic Medical College, Cincinnati		(1922)	79.4
Ohio State University College of Medicine		(1921)	83
University of Cincinnati	(1921) 91.5,	(1922)	85.6
Jefferson Medical College		(1896)	77
Medico-Chirurgical College of Philadelphia		(1907)	80.9
University of Pennsylvania	(1899) 84.2,	(1921)	87.5
University of Pittsburgh		(1912)	78.2
Medical College of the State of South Carolina	(1901) 80.4,	(1923)	78.8, 85.2
University of Tennessee		(1922)	84.6
Vanderbilt University Medical Department	(1909) 76,	(1916)	75
University College of Medicine, Richmond		(1907)	75.5
University of Toronto, Ontario		(1899)	83

College	FAILED	Year Grad.	Per Cent.
Atlanta College of Physicians and Surgeons		(1905)	71.4
Georgia College of Eclectic Medicine and Surgery		(1897)	55.7
Hospital Medical College, Eclectic, Atlanta		(1909)†	38.4
University of Georgia		(1911)	67.4
Hahnemann Medical College and Hospital, Chicago		(1902)	69.9
Physio-Medical College of Indiana		(1897)	51.6
College of Physicians and Surgeons, Baltimore		(1879)	68.8
Tulane University		(1910)	70.5
Barnes Medical College		(1897)	45.4
University of the City of New York		(1895)	0
University of Pittsburgh		(1912)	0
University of Nashville, Medical Department		(1898)	65.8
University of Tennessee		(1906)	72.7
University College of Medicine, Richmond		(1901)	71.4
University of Havana, Cuba	(1920)† 71.8,	(1922)†	71
University of St. Thomas Medical Dept., Manila		(1910)	58.3

* This candidate has finished his medical course and will receive his M.D. degree on completion of a year's internship in a hospital.
† Graduation not verified.

Idaho October Examination

Mr. F. A. Jeter, commissioner, Idaho Board of Medical Examiners, reports the written examination held at Boise, Oct. 9, 1923. The examination covered 11 subjects and included 110 questions. An average of 75 per cent. was required to pass. Eight candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Medical Evangelists		(1923)	85.2
Howard University School of Medicine		(1891)	79
Chicago College of Medicine and Surgery		(1916)	84.6

Indiana University School of Medicine	(1919)	90.3
Baltimore University School of Medicine	(1901)	78.6
University of Maryland	(1922)	92.9
Harvard University	(1896)	83.6
University of Wooster Medical Department	(1891)	84.3

Ohio June Examination

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports the examination held at Columbus, June 5-8, 1923. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 174 candidates examined, 171 passed and 3 failed. Twenty-seven candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Bennett Medical College		(1913)	83.3
Rush Medical College		(1923)	85.5
University of Illinois		(1923)	84, 85.5
Johns Hopkins University		(1921)	85.6
Harvard University		(1920)	88.5
St. Louis University School of Medicine		(1922)	83.3, 88.2
Cornell University Medical College		(1920)	83.5
Eclectic Medical College, Cincinnati		(1923, 15)	78.4, 82.2, 82.5, 82.8, 82.9, 83.4, 84.2, 84.4, 85, 85.4, 86, 86.2, 86.7 88.9, 88.9
Ohio State University College of Med.		(1922)	87.3, (1923, 42) 81.7, 82, 82.5, 83.2, 83.2, 83.6, 83.7, 83.8, 83.9, 84, 84.2, 84.3, 84.5, 84.6, 84.7, 84.9, 85.1, 85.2, 85.3, 85.3, 85.4, 85.8, 85.8, 85.8, 85.9, 86.4, 86.4, 86.5, 86.5, 86.7, 86.7, 86.9, 87, 87.2, 87.5, 87.5, 88.1, 88.4, 88.7, 88.7, 89, 89.5
University of Cincinnati		(1923, 58)	79.5, 79.8, 80.4, 81, 81.6, 81.7, 81.8, 81.8, 81.9, 81.9, 82, 82.1, 82.1, 82.2, 82.2, 82.5, 83.1, 83.2, 83.3, 83.3, 83.4, 83.6, 83.6, 83.7, 83.8, 83.9, 83.9, 84, 84.1, 84.2, 84.3, 84.4, 84.5, 84.5, 84.6, 84.7, 84.7, 84.9, 85.6, 85.6, 85.7, 85.8, 86.2, 86.3, 86.4, 86.5, 86.6, 86.6, 87.1, 87.2, 87.4, 87.6, 87.9, 88.3, 88.8, 89.3, 89.4, 89.7
Western Reserve University		(1923, 30)	81.1, 82.4, 82.6, 82.7, 82.8, 83.6, 83.7, 83.7, 84, 84, 84.3, 84.3, 84.8, 84.9, 85, 85.1, 85.4, 85.5, 85.5, 86.3, 86.6, 86.6, 86.7, 86.8, 87.1, 87.4, 89.2, 89.9, 90.2, 90.4
Jefferson Medical College		(1923)	87.6, 88.4
Temple University		(1921)	84.3
University of Pittsburgh		(1923)	84.6, 85.2, 86.5, 87.1
Meharry Medical College		(1923)	75, 75.5, 76.8
University of Tennessee		(1911)	84.1
University of Vienna		(1913)*	82.2
Licentiate of the Royal College of Physicians, London, and the Royal College of Surgeons, England		(1917)*	78.3
University of Paris, France		(1914)*	81.2
University of Wurzburg, Germany		(1922)*	86.1
University of Budapest, Hungary		(1917)*	79.6

College	FAILED	Year Grad.	Per Cent.
University of Naples, Italy		(1919)*	68.5, (1921)* 71.2
University of St. Joseph, Beirut, Syria		(1919)	64.3

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University		(1919)	Dist. Colum.
Northwestern University Medical School		(1898, 2)	Illinois
Rush Medical College		(1923)	Illinois
Indiana University School of Med.		(1908) Indiana; (1922)	Indiana
College of Physicians and Surgeons, Keokuk		(1882)	Iowa
Kentucky School of Medicine		(1894)	Kentucky
University of Louisville Medical Depart.		(1922)	Kentucky
Tulane University		(1915)	Kentucky
Johns Hopkins University		(1921, 2)	Maryland
Detroit College of Medicine and Surgery		(1922)	Michigan
University Medical College of Kansas City		(1902)	Kansas
Washington University		(1919)	Missouri
Fordham University		(1921)	New York
New York Homeopathic Med. Coll. and Flower Hosp.		(1921)	New York
Ningara University		(1895)	Michigan
Syracuse University College of Medicine		(1922)	New York
University of Buffalo		(1913)	New York
University of Cincinnati		(1921)	Wyoming
University of Pennsylvania School of Medicine		(1902) (1911) Virginia, (1920) Pennsylvania	Penna.
Meharry Medical College		(1912)	W. Virginia
University of Texas		(1916)	Texas
University of Vermont		(1906)	Vermont

* Graduation not verified.

Porto Rico October Examination

Dr. Diego A. Biascoechea, secretary, Board of Medical Examiners of Porto Rico, reports the written and practical examination held at San Juan, P. R., Oct. 2, 1923. The examination covered 9 subjects and included 80 questions. An average of 75 per cent. was required to pass. Nine candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Emory University		(1921)	82.3
Tulane University		(1921)	75.8
University of Maryland		(1921)	90
Boston University		(1922)	87.4
St. Louis University School of Medicine		(1923)	85.1
Syracuse University College of Medicine		(1923)	84.8
University of Pennsylvania		(1922) 86.1, (1923)	85.5
University of Valencia, Spain		(1916)*	75

* Graduation not verified.

Social Medicine and Medical Economics

WHY THE MEDICAL PROFESSION SHOULD BE RELIEVED FROM PRESENT TAX BURDENS

The medical profession has three causes for complaint concerning federal taxation:

1. That under the Harrison Narcotic Act, as amended by the Revenue Act of 1918, an excessive and now unnecessary war tax is imposed on the profession.

2. That the physician is compelled to pay an income tax on money paid out by him for certain expenses of his profession, and is thus taxed on an amount in excess of his net income.

3. That the physician is taxed on his earned income at the same rate that he and taxpayers generally are taxed on income from investments, etc.

The following memoranda are submitted to aid the profession in making a clear statement of the situation in presenting to Congress its appeal for relief.

Arguments Against the Continuance of the War Tax under the Harrison Narcotic Act.—In protesting against the continuance of taxation under the Harrison Narcotic Act at the rate fixed by the Revenue Act of 1918 as a war measure, three dollars a year, it should be made clear that the medical profession is not protesting against the Harrison Narcotic Act itself, nor against such taxation under it as may be necessary to give the federal government jurisdiction. The Harrison Narcotic Act originally fixed a tax of one dollar a year, which was deemed sufficient to secure federal jurisdiction, and of that tax no complaint was ever made. Any tax in excess of the minimum amount necessary to give federal jurisdiction is essentially an occupation tax on the physician and as such represents a discrimination against the medical profession, since federal occupation taxes are not imposed on other professions. So far as this tax may be passed on by physicians to their patients, it is a tax on the sick and injured, falling on them because they are sick and injured. The tax collected under the Harrison Narcotic Act is paid into the general revenues of the United States, and does not go directly toward the enforcement of the act. The amount collected under this act from all sources is largely in excess of the amount expended for the enforcement of the act—in 1922, for instance, $610,311.13 in excess of the amount expended during the same year. In any event, however, there is no reason for imposing on the medical profession any greater part of the cost for enforcing the law than is imposed on any other group in the community, for the law is enacted for the benefit of the community and not for the benefit of the medical profession.

Argument in Favor of the Deductibility of Traveling Expenses and of the Cost of Postgraduate Study, as Expenses of the Practice of Medicine, in Computing the Physician's Income Tax.—In protesting against so much of the present income tax law as is construed as denying to the physician the right to deduct, in computing his federal income tax, expenses incurred in attending meetings of medical societies and in postgraduate study, the following facts should be borne in mind. The present law provides that the physician, in common with all other business and professional men, in computing his net income, may deduct, "all the ordinary and necessary expenses paid or incurred during the taxable year in carrying on any trade or business, including a reasonable allowance for salaries or other compensation for personal services actually rendered; *traveling expenses (including the entire amount expended for meals and lodging) while away from home in the pursuit of a trade or business;* . . ." "The Commissioner of Internal Revenue has ruled, however, that a physician who is away from home in attendance at a meeting of a medical society or while pursuing postgraduate study is not away from home in the pursuit of his profession

and that the expenses incident to such travel and study are not ordinary and necessary expenses of the practice of medicine. Such expenses are regarded by the commissioner as merely personal expenses, such as are covered by the provisions of the income tax law which allow to all taxpayers, without regard to their callings or to the necessity for travel imposed by such callings, certain exemptions to cover personal expenses. Obviously, this ruling ignores the fact that such expenses arise in the case of a physician as incidents of his professional work.

The commissioner's interpretation of the law in this respect is out of harmony, too, with the provisions of the law generally as they relate to medical practice. The physician may, for instance, deduct as a professional expense membership dues paid to medical societies, but the ruling complained of penalizes him if he undertakes to make such a membership effective by attending the meeting of such societies. The incongruity of the ruling is further shown by the fact that if a physician travels from one place to another to consult with a fellow physician regarding the treatment of a single patient, he can deduct the expenses of such travel, whereas if the same physician travels between the very same places to confer with a hundred of his fellow physicians in consultation concerning the treatment of patients generally, he cannot deduct his expenses. If a physician travels from one place to another to examine one patient in order to apply the knowledge and skill thus acquired for the benefit of that patient, his traveling expenses are deductible; but if he travels from one place to another to engage in postgraduate study of many patients in order to make the knowledge and skill obtained available to the entire community which he serves, he cannot deduct traveling expenses, but must pay an income tax on them.

Obviously, to discourage meetings of medical societies and of postgraduate study, as the prevailing construction of the Revenue Act of 1921 now does, is poor public policy. Meeting in such societies and in the course of such study tends to conserve and promote public health. It tends, too, to increase federal revenues by increasing the earning capacity of the physician. Moreover, by bringing together physicians from various parts of the country, it tends to break down local prejudices and to encourage broader national unity and patriotism. Such travel ought, therefore, to be encouraged, not discouraged.

Argument in Favor of the Reduction of Tax Rate on Earned Income.—The provision of the proposed revenue law that makes the rate of taxation on earned income less than the rate on income from investments, speculation, etc., is new. The benefit thus conferred is to be extended to all taxpayers with earned incomes, and the physician is to be benefited merely as a member of the income-earning group. The concessions in favor of earned incomes is based on the fact that taxation on an earned income is taxation on the productive activity of the taxpayer and tends to discourage such activity and that, since the productive activity of the taxpayer may be diminished or destroyed at any time by personal disability and is certainly destroyed by death, it is entitled to special consideration in the determination of the tax rate. The concession in favor of earned incomes has been recommended by the Secretary of the Treasury, but unless those who are to be benefited by it unite in an effort to make their position clear, the secretary's recommendation may not receive favorable action by Congress.

Procedure to Make Requests and Protests Effective.—State and county societies should adopt resolutions, and file copies of them with the Committee on Ways and Means of the House of Representatives, and the Committee on Finance of the Senate. This can be best done through an interested senator or representative in Washington. Copies of such resolutions should be sent also to all senators and representatives from the state from which the request and protest comes. Individual physicians should write to the senators and representatives who represent them in Congress, acquainting them with the views of the profession regarding the situation. This should be done immediately, as action on the pending bill will probably be not long delayed.

IODIN CONTENT OF SEA FOODS

The United States Bureau of Fisheries has issued a report on the iodin content of sea foods, showing that oysters, clams, lobsters and other marine sea food are unusually rich in iodin, and that marine fishes contain much more iodin than fresh water fishes.

The importance of these results is emphasized by the bureau to show the value of marine fish as a food in the diet of persons with goiter. "In recent years," the report says, "a lack of iodin in food and drinking water has been recognized as one of the important causes of endemic goiter, cretinism and other disorders of the thyroid gland. Thyroxin, the active principle of the thyroid, has been shown to be an iodin compound. Various observers have shown that it is necessary to have small amounts of iodin in the food or drinking water to enable the thyroid gland to function properly.

"There has been some disagreement among observers as to whether sea foods contained sufficient iodin to be of importance in human nutrition. For many centuries, marine algae have been generally recognized as possessing valuable therapeutic properties in the treatment of disorders of the thyroid gland. In recent years it has been shown that this property is caused by the large amounts of iodin which these algae contain. However, fishes, mollusks and crustaceans do not contain such large amounts of iodin, and because of the lack of refined analytical methods suitable for the determination of minute quantities of iodin, many conflicting data have been published. Some chemists have published results which indicate that fish and shellfish contain large amounts of iodin, while others have failed to detect even small amounts in the most common sea foods."

The report of the bureau contains a statistical summary of the iodin content of fruits, vegetables, milk, eggs and meat as compared with marine sea food, and concludes with the statement that:

"The data indicate that marine fishes, mollusks and crustaceans are higher in iodin than any other common foods. The only foods which contain more iodin than oysters, clams and lobsters are the marine algae which, unfortunately, do not enter into the dietary of the majority of Americans. The fact that oysters, clams and lobsters contain about 200 times as much iodin as beef steak or milk, shrimp 100 times as much, crabs and most ocean fishes fifty times as much should be of considerable importance in the nutrition of people living in the so-called goitrous belts. It is evident that, by replacing meat with marine fish or shell fish in the diet two to three times each week, the amount of iodin ingested can be increased considerably. This is especially important in planning the diet of young girls living in districts where disorders of the thyroid gland are common, as they are particularly susceptible to goiter."

This report is the work of Dr. Donald K. Tressler, chemist, and Mr. A. W. Wells, technologist, of the Bureau of Fisheries.

PHYSICAL CONDITION OF PERSONS ENGAGED IN MEASURING RADIUM PREPARATIONS

Virtually all the radium that is sold for medical or scientific purposes by manufacturers or commercial firms in the United States is sent to the United States Bureau of Standards for measurement; thus, the employees of the radium section of the Bureau of Standards daily handle radium in varying amounts up to 750 mg. The total amount that may be on hand at the Bureau of Standards at any one time varies from 0.5 to 4 gm. Radium bromid is the salt that is most frequently handled. The physical effects on radium workers of continued exposure to radiation were studied by R. C. Williams (*Pub. Health Rep.* **38**:3007 [Dec. 21] 1923) for a period of eighteen months. Apparently, certain blood changes had occurred in the workers; notably, a tendency in the polymorphonuclear neutrophils to remain slightly below the lower normal limit, and a diminution in the small lymphocytes, while the large lymphocytes apparently ran somewhat higher than normal. The total white cells had a tendency to decrease, as also had the total red cells. A low blood pressure, as compared with the usually accepted normal, was noted in almost all the employees of the section. On the

basis of this study, various recommendations are offered: In the handling of radium, all employees of the section should utilize to the greatest possible extent all practicable protective devices, such as screens, lead-lined carrier boxes, and handling forceps. All rooms in which radium is handled should be adequately and thoroughly ventilated; the use of electric fans for this purpose appears to be highly desirable. All employees of the section should be warned to reduce to a minimum the amount of unavoidable unprotected exposure to radiation, and not to remain in the vicinity of radium longer than is necessary. All employees of the section should be allowed to work only five days a week, and at least a two-day period should intervene between the two holidays of each week, these not to be considered annual or sick leave. All employees of the section should be required to take thirty days' annual leave each year, preferably, whenever at all practicable, in two-week periods at six-month intervals.

Book Notices

EXCURSIONS INTO SURGICAL SUBJECTS. By John B. Deaver, M.D., Sc.D., LL.D., Surgeon-in-Chief, Lankenau Hospital, and Stanley P. Reimann, M.D., Assistant Professor of Experimental Pathology, University of Pennsylvania. Cloth. Price, $4.50, net. Pp. 188, with 30 illustrations. Philadelphia: W. B. Saunders Company, 1923.

This consists of eight articles, the first five of which were a series of lectures delivered by Deaver in 1922 at the Washington University, Seattle, in the extension course for graduate physicians of that institution. The first talk is a general discussion of peptic ulcer. This covers fifty-one pages and presents in clinical form a condensed but fairly complete summary of our present knowledge of the subject, including historical facts, etiology, pathologic anatomy, symptoms, diagnosis and differential diagnosis, considering, in particular, duodenal ulcer and malignant ulcer, and treatment. He believes that medical treatment is of little value and that in the long run gastrojejunostomy, with excision of the ulcer, provides a greater opportunity for cure and offers a longer expectancy of life. In cases seen early, when the ulcer is small and has not seriously affected the gastric mechanism, simple excision and closing of the gastrotomy wound may suffice, though cases are rarely seen early enough for this. The second lecture is a general consideration of jaundice, with special reference to its clinical significance. While this covers only twelve pages, it contains a surprising amount of information. The third lecture considers diseases of the bile passages, and presents in an orderly manner a rather complete discussion of cholecystitis and cholelithiasis. The most recent ideas of pathogenesis are clearly set forth, and the subject of treatment is substantiated from the author's extensive experience. The next article, on the trials, tribulations and joys of a surgeon, is an extremely interesting and unusual exposition by a surgeon of wide experience and high ideals. The last of this series of lectures deals with some surgical conditions of the intestinal tract. The last three lectures comprise Dr. Deaver's address, entitled "The Contribution of Pasteur to Modern Surgery," delivered at Philadelphia, Dec. 27, 1922, at the Pasteur centenary celebration; a talk on medical education and educators, and a paper on living pathology, read before the Tri-State Medical Association, Madison, Wis., in August, 1918. The material is presented in the form of surgical clinics. The style is simple, direct and forceful. The work can be recommended to the general practitioner as an enjoyable and rapid means of acquiring a summary of the present knowledge of the subjects.

SERUM DIAGNOSIS OF SYPHILIS. The Wassermann and Sigma Reactions Compared. Medical Research Council. Special Report Series, No. 78. Paper. Price, 5 shillings 6 pence net. Pp. 171, with 7 illustrations. London: His Majesty's Stationery Office, 1923.

This report has to do with the relative value of the sigma reaction, originated by Dreyer and Ward, and the Wassermann reaction in the diagnosis of syphilis. It is divided into three parts: Part I, (*a*) analysis of results obtained in the comparison of the Wassermann and sigma reactions in the same serums; (*b*) technical methods, by Georges Dreyer, H. K. Ward, James McIntosh, and P. G. Fildes; Part II, a comparison between the results obtained by the Wassermann test and by the flocculation test of Dreyer and Ward, by Thomas Houston, S. B. Boyd Campbell, J. A. Smyth, J. C. Rankin, and Hugo Hall; and Part III, report on the results of 1,500 comparative tests done by the Wassermann reaction and the sigma reaction, by Adrian Stokes and J. T. Wigham. The sigma reaction is a flocculation test based on the principles of the Sachs-Georgi reaction, but so standardized that workers with the same serum may obtain similar results, a point that does not always obtain with the multiplicity of the modifications of the Wassermann test. Only two reagents are employed instead of the five of the Wassermann test, since the hemolytic system is eliminated; it is very simple and inexpensive, but requires more serum than the Wassermann test and is more laborious for large numbers of reactions. The details of the sigma reaction were described by Dreyer and Ward in the *Lancet* **1**:956 (May 7) 1921. In Part I, the examinations were made on 894 specimens of serum, the Wassermann technic of McIntosh and of Fildes both being employed; in Part II, the report covers the examination of 1,342 serums, the Wassermann methods of Harrison and of Fleming being adopted, while in Part III, 1,500 serums were investigated. The conclusions of the three groups of workers are in agreement, and are to the effect that: (1) An approximately equal number of positive results is obtained by the Wassermann and sigma reactions in untreated cases of manifest syphilis; (2) in treated cases the sigma reaction gives a larger number of positive reactions than the Wassermann reaction; (3) when the results of the two reactions are expressed quantitatively they do not in some cases run parallel, although there is usually a rough correlation between strong and weak reactions with each test; (4) in supposed nonsyphilitic cases, one or the other of the reactions may be positive, and (5) a negative finding by any of these methods does not warrant the conclusion that the patient is free from the disease. It would seem, therefore, that the sigma reaction should receive some attention from workers in this country, owing especially to its standardized technic, which permits comparable results of different workers. Certainly it should serve as a check on the Wassermann test, as its results run nearly parallel to those of the older method of diagnosis.

HANDBUCH DER RÖNTGENTHERAPIE. Herausgegeben von Professor Dr. Paul Krause, Geh. Medizinalrat, Direktor der Medizin. Universitätspoliklinik in Bonn. Lieferung 4: Die Röntgenstrahlenbehandlung in der Gynäkologie. Von Dr. Heinrich Martius, Prof. an der Universitäts-Frauen-Klinik in Bonn a. Rh. Paper. Pp. 203, with 46 illustrations. Leipsic: Dr. Werner Klinkhardt, 1923.

This volume of an extensive system covering the entire field of therapeutic electricity deals with the roentgen-ray treatment of gynecologic disturbances. Its value depends not only on the wealth of technical information it contains but also on the inductive method by which the indications, the special technic, the incidental dangers of this treatment and their avoidance are presented. A special chapter deals with the hemorrhagic metropathies that are independent of any tumefaction in the uterus, as metrorrhagias during puberty and the climacteric hemorrhages. A subdivision deals with the general influence of roentgen rays on the body, commenting on the direct chemical action on the system and the remote sequelae. The possible damage done to the blood and the various blood pictures are also discussed. In the evaluation of the microscopic findings, the author arrives at the important conclusion that neither the changes in the cancer cells nor those in the fibrous tissue offer anything specific for the action of the rays. Only the extent of these necrobiotic and cicatricial changes bear testimony in favor of the influence of the irradiation. All these points are included in this summary: The principal factor in irradiating a cancer is the impairment of the vitality of the cancer cell. The fibrous tissue, being less radiosensitive than the cancer proper, plays a very important part in the definite destruction of the cancerous tissue already impaired by the irradiation. There is no proof available for the assumption of a direct roentgen-ray stimulus of the healing process in the fibrous tissue. But it is plausible to assume that the vitality of the fibrous cells is indirectly enhanced by the products of the decay in the disintegrating cancer cells; therefore the success of the irra-

diation depends just as much on the difference of the sensibility of the cancer and fibrous cells as on the degree of reaction coextensive over the local and general processes of healing. The intense application of the rays, if possible, in one sitting is favored by the author. He concludes that the direct radiotherapeutic results fall somewhat short of the operative achievements. The book represents the best information obtainable at this time on the topic chosen, and presents clearly and impartially the views of experts.

THE NEW DIETETICS. A Guide to Scientific Feeding in Health and Disease. By John Harvey Kellogg, M.D., LL.D., F.A.C.S., Superintendent of the Battle Creek Sanitarium. Second edition. Cloth. Price, $5.75. Pp. 1201, with illustrations. Battle Creek: The Modern Medicine Publishing Company, 1923.

This large volume leaves the reviewer sadly depressed and emotionally fatigued. Almost all the "good" things to which he has been accustomed and which have been of especial service in preparation for the study hour are put under the ban: his dinner was all wrong, he had soup, meat, coffee with sugar, and he learned from this book that he should have put them aside as visitations of Satan. His enjoyable half-hour with a Havana was "a thing too impudent and offensive, to say nothing of its insidious destructiveness, to be tolerated by a decent and rational society." So perhaps he was not in proper physical or mental condition to pass judgment. Yet he finds much of interest and value in these pages. Doctrines varying from the generally accepted are always hard to digest, and Kellogg differs in many ways from most authorities on food. He has had a tremendous clinical experience with the practical application of his theories, and whether or not one individually agrees with his theories, one must accept his clinical facts. We find a wide knowledge of the physiologic and chemical literature in these pages, a splendid clinical adaptation of experimental data; yet in places one notes with regret the absence of signs of the opposing point of view. Although Graham Lusk may be mentioned, we fail to find reference to his noteworthy contributions to the science of nutrition; but all the work of the Chittenden school on protein requirements receives honorable mention. From the point of view of scientific medicine, it is likewise to be regretted that the many quotations from the literature are not catalogued into a bibliography, which would not interfere with popular reading and would add to the scientific value of the book. Repetition of the same subject matter on different pages occurs frequently; some looseness of terms may be claimed for the sentence (p. 475) that discusses the failure of the kidneys to remove sodium chlorid in various diseases, particularly "Bright's disease, some forms of heart disease, . . . edema and dropsy," or for the heading (p. 478) "Bright's Disease Due to the Excessive Use of Salt." It also looks like stretching a point to say, in the face of almost universal meat eating, "that all *meats* should be examined bacteriologically before using as food. Meat may be swarming with putrefactive, ptomain-producing bacteria" (p. 500). One can find much to object to and much to praise. The very valuable tables, the detailed discussions of food values, the details of management of the diet in almost every kind of disease are probably not surpassed in other food book.

L'HÉMATOBLASTE TROISIÈME ÉLÉMENT DU SANG. Par Georges Hayem. Avant-Propos et Annotations Par le Docteur L. Rivet. Paper. Pp. 295, with 45 illustrations. Paris: Les Presses Universitaires de France, 1923.

In this book is summarized all the work of the French hematologist Georges Hayem on the blood platelets, or hematoblasts, as they are called in France. The historical introduction and the annotations by the editor are valuable, and the book will be of great interest to all students and investigators of the blood.

L'INDIVIDUALITÀ DEL SANGUE NELLA BIOLOGIA, NELLA CLINICA E NELLA MEDICINA LEGALE. By Prof. Leone Lattes, Direttore dell'Instituto di Medicina Legale della R. Università di Modena. Paper. Pp. 174, with 43 illustrations. Messina: Giuseppe Principato [1923].

This little book gives a thorough and reliable discussion of iso-agglutination of blood in all its phases. American work is considered fully. The author favors the general employment of the Jansky grouping. The book merits a wide use.

Medicolegal

Injury to Patient from Explosion of Machine Used in Anesthetizing

(Wilt v. McCallum et al. (Mo.) 253 S. W. R. 156)

The Kansas City (Mo.) Court of Appeals says that the plaintiff employed one of the two physicians made defendants to perform an operation on her for the removal of a caruncle in the urethra, and he arranged for the other defendant to administer an anesthetic consisting of nitrous oxid mixed with oxygen, using therefor a Heidbrink apparatus. After the caruncle was removed, the operating surgeon started to use a Wappler high frequency electrical converter to cauterize the wound. As soon as the electrode of this machine was applied to the plaintiff there was an explosion in the gas mask and rubber tubes attached to the mask, a hole being blown in the tube four or five inches from the face mask. The explosion caused her face to be burned and an injury to her eyes. She sued the two physicians for damages. The case was pleaded and submitted on the theory of res ipsa loquitur ("the matter speaks for itself"), whereas the defendants contended that such theory had no place under the facts in this case. The plaintiff recovered a judgment for $6,000, but voluntarily remitted $3,000 from it, leaving a judgment in her favor for $3,000, which is reversed and the cause remanded for another trial.

Under the testimony, the cause of the explosion was left largely to conjecture and speculation. The plaintiff, relying on the doctrine of res ispa loquitur and the theory that the duty was on the defendants to explain the unfortunate happening, made only a slight effort to show the cause of the explosion; and the defendants made no effort to explain it, but contented themselves with showing that proper machines were being used, and that the anesthetic was being administered and the operation carried on in the proper manner, and in a way that physicians had often done before and afterward without any untoward occurrence; and that they did not know why the explosion occurred. However, it was apparent from the record that the explosion occurred by reason of the fact that some carbon or foreign substance had got into the nitrous oxid and oxygen gas being used. Whether these substances were in the tanks furnished by an oxygen gas company, or whether they were introduced into the face mask or tubes through the carelessness of the anesthetist, was a matter of speculation. A more plausible theory of the cause of the explosion was that a foreign substance was introduced by the manufacturers into the gases being used. The explosive mixture was ignited, it was reasonable to say, through an electric spark coming from the Wappler transformer, though, of course, it was possible that there was a short circuit in the wire attached to the nitrous oxid chamber of the Heidbrink machine, and that a spark came through this machine and through the wiring that reinforced the tube attached to the face piece or mask, although, in view of the fact that the explosion occurred the moment the electrode of the Wappler apparatus was applied to the body of the plaintiff, the latter explanation as to the source of the ignition would seem to be improbable.

The court is unable to see on what theory the doctrine of res ipsa loquitur could be applied in this case. Unquestionably the duty owing by the defendants, or either of them, to the plaintiff was that of ordinary care. In the absence of fact from which the court could say that the explosion was one that, according to ordinary experience, does not happen if the apparatus is being operated with proper care, the doctrine could not apply. Did the mere happening of the explosion under the circumstances in this case show that, according to ordinary experience, it would not have happened if the defendants had exercised the proper care? The court thinks not. If the explosion was caused by improper ingredients mixed with the nitrous oxid and oxygen by the manufacturer, a reputable concern, then the defendants, or either of them, would not be liable in this case. As men exercising the care that individuals in their position ordinarily do, they would not be expected to have the contents of the gas containers

analyzed or tested before using them. The fact that a contract relation existed did not require them to use more than ordinary care. There was no showing or charge that they were derelict in their duty. Nor was there any plea in the petition that they were not possessed of the ordinary and average skill of men of their profession in the community. Absent evidence to the contrary, the law presumed that the defendants did their duty properly.

Roentgenographic Examination for Prisoner—Hypothetic Question

(State v. Vonderhaar (Ohio), 140 N. E. R. 80)

The Supreme Court of Ohio, in overruling exceptions in this case, in which there was a conviction of murder, says that, on the application of the prisoner, excepted to by the state, the trial court made an order that the prisoner should be sent to a place outside the county jail, namely, the general city hospital, for roentgenographic examination. This action was within the court's discretion, and was not error. The exceptions taken in that respect are therefore overruled.

On the trial, the defendant offered testimony tending to show insanity, and offered expert witnesses in that behalf. This gave rise to the question being propounded in the briefs of counsel: "Is a hypothetical question propounded on cross-examination to the defendant's witness objectionable merely because the question does not contain the evidence introduced on behalf of the defendant?" Were this court to answer the question in the abstract, it would be answered in the negative, provided, of course, that the prosecutor's question was based on evidence offered in the case. However, in the state of this record, the briefs did not point out the evidence on which the hypothetic question was based on cross-examination, and for that reason the exceptions to the question are overruled.

Medical Examinations for Handlers of Food Products

(Langley et al. v. City of Dallas (Texas), 252 S. W. R. 203)

The Court of Civil Appeals of Texas affirms a judgment that refused the plaintiffs an injunction to restrain the enforcement of a food ordinance for the defendant city enacted by the board of commissioners of the city. The court says that the ordinance requires all those engaged in operating food products establishments, including grocery stores, to have medical examinations of themselves and their employees made at intervals of not more than six months. The ordinance makes it an offense punishable by fine for any operator of such an establishment to employ a person with an infectious or contagious disease. The Wassermann blood test is required, and both the employers and the employees who work at such places are compelled to undergo it. The charter of the city grants it the power "to enact and enforce ordinances necessary to protect health, life, and property, . . . to protect the lives, health, and property of the inhabitants of said city; . . . and it shall have and exercise all powers of municipal government not prohibited by this charter, or by some general law of the state of Texas, or by the provisions of the constitution of Texas." This charter language is an express delegation of authority to enact the ordinance. Furtherance of the protection of the public health in a large city is a paramount function of the municipal government, especially when the municipality receives the authority expressed by such charter provisions.

The ordinance is not patently arbitrary. This court cannot say from the general knowledge or common experience of mankind, nor by any other proper test, that the ordinance inflicts an unreasonable and unnecessary destruction of either property or personal rights on those to whom it applies. In such circumstances, courts cannot undertake to determine the question of the necessity for the regulations imposed. That question, under these conditions, is one of legislative policy belonging, in this instance, exclusively to the board of commissioners. The ordinance applies uniformly and without distinction or discrimination to all those of the classes affected and regulated by it in the interest of the public health, and hence does not contravene the constitutional provision for the equal protection of the law.

When Expert Testimony Cannot Be Disregarded—Effect of Carbon Monoxid on Different Persons—Survivorship

(In re Butt's Estate (Wis.), 193 N. W. R. 988)

The Supreme Court of Wisconsin says that a father and a mother and their two boys, aged, respectively 2 and 3 years, sleeping in a room 7½ feet wide, 16 feet long and 8 feet high, met their death by carbon monoxid poisoning, there being in the basement a hot air furnace burning hard coal. The parents were both 23 years old, and, it was assumed, were both in fair physical condition. The question before the court was as to survivorship, because if the father survived his wife and children then his estate would go to his brothers and sisters; otherwise, to the parents of his wife, who were the appellants from a decision that the father had been the survivor, and that his estate descended to his next of kin. A physician who had had experience in cases relating to asphyxiation and had experimented as to combustion of gas with reference to water heaters in bathrooms without exit flue, and another physician who had had experience in carbon monoxid poisoning, were called as witnesses, and each testified in substance that, assuming the conditions stated, it was his belief, based on his experience and knowledge of carbon monoxid poisoning and its effect on the human system, that the father was the first victim, the mother and children surviving him. They reached this conclusion chiefly from the fact that women, living an indoor life, become more or less immune to the toxic effects of gas, and also that they require less oxygen than men, who live an outdoor life. The witnesses testified that young children require less oxygen than older people, and that, under similar conditions of gas poisoning, they would outlive the father in this case, but might not outlive the mother, who would be more or less immune. Two physicians were called as witnesses for the defense; but the testimony, as an expert, of one of them, who graduated from college in 1919, and who had had no practical experience in poisoning of this kind, the court thinks might be disregarded because of incompetence for lack of experience; while the other physician said that there was nothing in his knowledge as a physician from which he could state that there was a particle of evidence to indicate who of the group died first, but he thought that a child 2 or 3 years old could stand more carbon monoxid than an adult.

It devolved on the appellants to establish their case by a preponderance of the evidence. If they did this, even though the evidence was that of experts, such evidence could not be disregarded by the court unless it was in some way impeached. As this court views it, the evidence was practically undisputed, and only one conclusion could be drawn from it if the expert evidence was to be given any weight, and that was that the children and mother survived the father. The trial court evidently disregarded the expert testimony, following the rule often laid down that such evidence is to be viewed with caution and may be disregarded altogether when it conflicts with the common knowledge of judge or jury. However, there is a class of expert testimony that is competent, worthy of consideration, and that cannot be ignored by the trial court or jury, and that is the evidence of those persons who by reason of special study and experience possess knowledge and judgment not possessed by mankind in general. When expert testimony is properly admitted, it must be weighed and considered as other testimony.

In this case there were many physical facts which the judge might consider together with the expert testimony. But without expert testimony the cause would have been left wholly in the dark. The effects of carbon monoxid on different persons when inhaled, its relative weight and its diffusion with the air, and the probable currents of air following the heat that came from the hot air register, were properly matters of expert testimony. None but experts could know the effect of carbon monoxid on the human system or how it would affect different persons under different circumstances. This court considers that the trial judge was bound by such expert testimony in the absence of anything tending to impeach it. The evidence being substantially all one way, the duty of the court was to find accordingly. Wherefore the judgment of the county court is reversed, with directions to enter judgment in favor of the appellants.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

26: 503-602 (Dec.) 1923

Causation of Intracranial Hemorrhages in New-Born. H. Ehrenfest, St. Louis.—p. 503.
*Developmental Topography of Larynx, Trachea and Lungs in Fetus, New-Born, Infant and Child. G. J. Noback, Richmond, Va.—p. 515.
*Effect of Inadequate Diet on Inorganic Salt Content of Mother's Milk. A. M. Courtney, Toronto.—p. 534.
*Acidity of Stomach Contents of Infants. W. McK. Marriott and L. T. Davidson, St. Louis.—p. 542.
*Physiology of Exercise. Part 3. Investigation of Cardiovascular Tests in Normal Children and in Children with Tuberculosis and Valvular Heart Disease. M. Seham and G. Egerer-Seham, Minneapolis.—p. 554.
Résumé of Literature on Skin Disease of Infants and Children (1920-1923). W. S. O'Donnell, Ann Arbor, Mich.—p. 567.
*Meningitis Due to Micrococcus Catarrhalis. J. Garland, Boston.—p. 600.

Development of Respiratory Tract.—The material used by Noback in his study consisted of eighty-two stillborn fetuses and twenty-two full-term new-born children in whom respiration had been partially established, as indicated by the condition of the lungs. The findings were charted and the charts form the basis of this paper.

Effect of Inadequate Diet on Mother's Milk.—Continued use of a deficient diet by the nursing mother, according to Courtney, may have serious effects on the child, especially in the later stages of lactation, when the mother's reserve has become depleted. Observations on the lower animals even suggest that if the diet of the mother has been habitually below her own need in one or more constituents her milk may be below standard even from the beginning of lactation.

Acidity of Stomach Contents of Infants.—The acidity of the gastric contents of forty-one normal breast-fed infants examined by Marriott and Davidson at the height of digestion averaged p_H 3.75. The acidity of the gastric contents of infants suffering from infections or nutritional disturbances is distinctly lower than that of normal infants. Sweet cow's milk, by reason of its high "buffer" value, is capable of neutralizing a considerable portion of the acid of the gastric juice. This is one important reason why large amounts of sweet cow's milk cannot be tolerated well by infants. Milk containing from 0.5 to 0.7 per cent. of lactic acid does not neutralize the acid of the gastric juice to any greater extent than does breast milk. When such milk is fed undiluted to infants the acidity of the gastric contents approximates that of normal breast-fed infants. It is probable that, for this reason, infants are able to tolerate large amounts of lactic acid milk. In selecting a food for young infants, it is important to take into consideration the "buffer" or acid-binding qualities.

Cardiovascular Tests Inefficient.—The Sehams assert that the so-called cardiovascular tests in use today do not measure the functional capacity of the heart. Cramptom's, Schneider's and Barringer's tests do not seem to be of value in the diagnosis of physical fitness or cardiovascular ability in tuberculosis and heart disease in children. Delayed rises did not occur after exhaustive exercise, either in normal children or in those with tuberculosis or heart disease.

Meningitis Due to Micrococcus Catarrhalis.—A case of *Micrococcus catarrhalis* meningitis is reported by Garland that was complicated by pertussis and acute otitis media and ended fatally. Three other cases due to the same organism have been collected. Culturing and testing of the agglutinability of the organism in cases of meningococcus meningitis are said to be important, in order that a specific serum may be used in treatment.

American Journal of Ophthalmology, Chicago

6: 955-1026 (Dec.) 1923

Histologic Structure of Eye of Soft Shell Turtle. W. G. Gillett, Wichita, Kan.—p. 955.
Two Experiences with Acute Glaucoma. H. Woods, Baltimore.—p. 974.
Selective Thermotherapy. W. E. Shahan, St. Louis.—p. 978.
Significance of Deep Ocular Pain in Retinal Detachment. J. W. Charles, St. Louis.—p. 982.
Ocular Sections. G. F. Alexander, Scarborough, Eng.—p. 985.
Siderosis with Dilated Inactive Pupil. Recovery. N. M. Black, Milwaukee.—p. 990.
Case of Unilateral Vernal Catarrh with Corneal Ulceration. A. O. Pfingst, Louisville.—p. 996.

American Journal of Physiology, Baltimore

67: 1-218 (Dec. 1) 1923

Changes in Relative Weights of Viscera and Other Organs from Birth to Maturity—Albino Rat. H. H. Donaldson, Philadelphia.—p. 1.
Relation of Minute Glucose Output to Minute Volume of Perfusion in Isolated Liver of Terrapin. H. S. Wells, Baltimore.—p. 22.
*Thyroid Apparatus. XVIII. Differential Development of Albino Rat from 100 to 150 Days of Age and Influence of Thyroparathyroidectomy and Parathyroidectomy Thereon. F. S. Hammett, Philadelphia.—p. 29.
*Parabiosis in Study of Deficiency Diseases. L. R. Dragstedt and E. F. Cooper, Chicago.—p. 48.
*I. Preparation of Insulin. N. F. Fisher, Chicago.—p. 57.
*II. Absorption of Insulin from Intestine, Vagina and Scrotal Sac. N. F. Fisher, Chicago.—p. 65.
*III. Excretion of Insulin by Kidneys. N. F. Fisher and B. E. Noble, Chicago.—p 72.
*IV. Insulin-Like Substance in Kidney, Spleen and Skeletal Muscle. J. S. Ashby, Chicago.—p. 77.
Temperature Variations in Rabbits. F. B. Seibert and L. B. Mendel, New Haven, Conn.—p. 83.
Fever Producing Substance Found in Some Distilled Waters. F. B. Seibert, New Haven, Conn.—p. 90.
*Protein Fevers: Casein. F. B. Seibert and L. B. Mendel, New Haven, Conn.—p. 105.
Excitation of Gastric Secretion by Application of Substances to Duodenal and Jejunal Mucosa. A. C. Ivy and G. B. McIlvain, Chicago.—p. 124.
Physiology of Sleep. II. Attempts to Demonstrate Functional Changes in Nervous System During Experimental Insomnia. M. A. M. Lee and N. Kleitman, Chicago.—p. 141.
Anuria Following Temporary Anemia of Kidneys. J. E. Stoll and A. J. Carlson, Chicago.—p. 153.
Visceral Sensory Nervous System. XV. Motor Rhythm in Isolated Lung of Turtle (Crysemus Cinereus and Clemmys Gutta). J. F. Pearcy and A. J. Carlson, Chicago.—p. 162.
Fundamental Rhythm of Heidenhain Pouch Movements and Their Reflex Modifications. F. B. Robins, Jr., and T. E. Boyd, Chicago.—p. 166.
Biologic Food Tests. V. Biologic Value of Almond Proteins and of Almond Oil. A. F. Morgan, B. M. Newbecker and E. Bridge, Berkeley, Calif.—p. 173.
Daily Variations in Cardiovascular Conditions and Physical Efficiency Rating. E. C. Schneider and D. Truesdell, Middletown, Conn.—p. 193.
Simultaneous Cardiographic and Electrocardiographic Records in Man. J. Sands, Philadelphia.—p 203.
*Pulse Wave Velocity. D. Matzke, J. B. Priestley and J. Sands, Philadelphia.—p. 216.

Effect of Removal of Thyroid and Parathyroids on Development.—When the thyroid apparatus is removed, Hammett says that disproportionate differential development is produced in both sexes, similar, but not identical for each. The disturbance is quantitatively greater in the female and is in the direction of a general lowering of the growth capacity. Those organs which are concerned in the vegetative functions of the body are in both sexes more seriously distorted in development than are the other parts of the organism. The lungs, heart, kidneys, spleen, liver, suprarenals, pancreas and thymus not only cease their growth but actually lose weight. This is taken to indicate that the general retardation of growth observed in athyroid conditions is as much due to an inadequate preparation and presentation of metabolites to the tissues as to a general lowering of cell metabolism. The significance of this in the etiology of hypothyroid states is pointed out. The toxemia of parathyroid deficiency also causes distortion of differential development, which differs in the two sexes, but is not as great in degree or the same in kind as that which occurs following thyroparathyroidectomy.

Parabiosis in Study of Deficiency Diseases.—Vitamin A, even if given in great excess to one of a pair of parabiotic twins, Dragstedt and Cooper found, does not suffice to prevent the appearance of typical deficiency symptoms in the mate who is not fed any of the vitamin. There is either no toxemia in the early stages of the vitamin A deficiency disorder or, if present, the toxins do not pass to the control parabiotic animal in sufficient amounts definitely to induce the metabolic disturbance.

Toxic and Active Fractions in Pancreas.—There are present in the pancreas two antagonistic substances. The one substance, called the toxic fraction, raises the blood sugar

and causes death in rats and guinea-pigs by excessive stimulation of the medullary centers. The other material, called the active fraction (insulin), is the specific antidiabetic substance. The yield of insulin per kilogram of pancreas is proportional to the degree to which the toxic fraction is removed. The toxic fraction seems to be responsible for the irritation and sterile abscesses produced at the site of injection. The active fraction causes no such changes.

Absorption of Insulin from Scrotal Sac.—Fisher asserts that injections of insulin into the scrotal sac yield the maximum effect per unit of insulin, a prompt action, and of long duration, without apparent irritation. The very temporary action of insulin when introduced into the intestine seems to be due, in part, to rapid elimination by the kidneys, suggesting too rapid rather than too slow absorption. Insulin given by the vagina is absorbed and produces a temporary lowering of the blood sugar. The low level may be maintained by introducing insulin at one and one-half hour intervals.

Excretion of Insulin from Kidneys.—Fisher and Noble were able to recover insulin from the urine of diabetic dogs in amounts varying with the rate at which it enters the blood stream. More insulin can be recovered when it is given by the vaginal, oral, or Thiry fistula route or by mouth than when administered subcutaneously.

Insulin-Like Substance in Kidney, Spleen and Muscles.—Ashby extracted a substance from the kidney, the spleen, and the muscle of normal dogs and cattle, possessing an insulin-like action in reducing the blood sugar of rabbits. The insulin-like substance in these tissues disappears shortly after pancreatectomy.

Protein (?) Fever.—The results obtained by Seibert and Mendel, together with the numerous negative reactions obtained with alcohol-soluble proteins, where bacterial contamination would necessarily be checked by the method of preparation, and the knowledge of the cause of water fevers, would seem to indicate that protein per se may after all not be the cause of fever in the so-called "protein fevers."

Pulse Wave Velocity.—Additional evidence gained by Matzke, Priestley and Sands by examination of the velocities occurring in the lower extremities strengthens the belief that the pulse wave velocity is slower in central vessels and more rapid in the peripheral ones. (*a*) The average pulse wave velocity for central vessels from the heart to the groin is probably about 4.5. (*b*) The average pulse wave velocity from the groin to the foot in normal young men is 7.5 meters per second.

American Journal of Public Health, Albany

13: 989-1080 (Dec.) 1923

Reciprocity Between Health Officials and Medical Profession. E. C. Levy, Richmond, Va.—p. 989.
New Fields of Usefulness for Public Health Laboratory. F. F. Russell, New York.—p. 995.
Administrative Problems of State Laboratory. L. C. Havens, Montgomery, Ala.—p. 996.
Manhattan Health Society. H. Emerson, New York.—p. 999.
Coordinating Public Health Laws of United States. J. A. Tobey, New York.—p. 1004.
Food Inspection in Light of Present Day Science. C. Thom, Washington, D. C.—p. 1009.
Uniform Classification of Joint Causes of Death. J. O. Spain, Washington, D. C.—p. 1015.
Standardization of School Medical Inspection. C. E. Buck, Detroit.—p. 1017.
Control Measures in Monroe County, Michigan, Small-Pox Epidemic, 1923. G. H. Ramsey, Lansing.—p. 1023.

American Journal of Tropical Medicine, Baltimore

3: 461-554 (Nov.) 1923

Investigation to Determine Whether Clonorchiasis May Be Disseminated on Pacific Slope. N. E. Wayson, San Francisco.—p. 461.
Results of Treatment for Clonorchiasis. G. C. Shattuck, Boston.—p. 475.
*Series of Cases Giving Positive Weil-Felix Reaction. K. F. Maxcy and L. C. Havens, Montgomery, Ala.—p. 495.
Complete Fixation Test and Other Findings in Malaria. J. H. Chambers, Washington, D. C.—p. 509.
*Malaria in Panama. V. Pernicious Malaria. W. V. Brem, Los Angeles.—p. 517.
*Cultivation of Rickettsia-Like Micro-Organism from Tsutsugamushi Disease. A. W. Sellards, Boston.—p. 529.

Value of Positive Weil-Felix Reaction.—Eleven cases of fever of about two weeks' duration, with eruption and a positive Weil-Felix reaction during the course of the illness, are described by Maxcy and Havens. Evidence is presented to indicate doubt as to the proper classification of these cases; although Brill's disease seems to be most probable.

Pernicious Malaria in Panama.—The material studied by Brem included 331 attacks of pernicious malaria. Three pathologic subdivisions of pernicious malaria are suggested to replace the numerous old subdivisions based on predominant symptoms or complications erroneously attributed to malaria. The subdivisions or groups are as follows: (1) hyperinfection; (2) cerebral thrombosis, and (3) erythrolytic hemoglobinuria. Three clinical criteria are proposed for recognizing the pathologic groups: (1) degree of infection; (2) cerebral symptoms—coma or stupor, and (3) hemoglobinuria, trace, to "blackwater." A statistical study of the three groups is given, and treatment discussed. The causes of death and the parasites of pernicious malaria are discussed.

Rickettsia-Like Organism in Tsutsugamushi Disease.—A pathogenic micro-organism was obtained by Sellards in pure culture from animals infected with the virus of tsutsugamushi disease. In morphology and staining reactions, this micro-organism resembles closely the Rickettsia. On inoculation of these cultures into guinea-pigs, hemorrhagic lesions developed which were indistinguishable from the hemorrhages following the injection of the virus of tsutsugamushi disease. The cultures were pathogenic to some extent for rhesus monkeys, the injected animals showing evidence of active immunity against the virus. There has, as yet, been no opportunity to control these observations by the study of tsutsugamushi disease in man or by the examination of infective mites.

American Review of Tuberculosis, Baltimore

8: 195-307 (Nov.) 1923

Chemical Evidence on Phylogenetic Classification of Tubercle Bacillus. Plant or Animal Question. E. R. Long, Chicago.—p. 195.
*Chaulmoogra Oil in Treatment of Laryngeal Tuberculosis. I. D. Bronfin and C. Markel, Denver.—p. 214.
*Value of Organic Mercurial Compounds in Experimental Tuberculosis in Guinea-Pigs. XXVIII. L. M. DeWitt, Chicago.—p. 234.
*Iodin Value of Fat Contained in Livers from Tuberculous Subjects. M. Goldberg, New York.—p. 245.
*Fusiform Bacilli and Spirochetes. VI. Their Association with Pulmonary Tuberculosis in Cavities, Bronchiectasis and Gangrene. I. Pilot, D. J. Davis and I. J. Shapiro, Chicago.—p. 249.
*Presence of Virulent Tubercle Bacilli in Human Bile. H. J. Corper, J. S. Simmons and H. Freed, Denver.—p. 260.
*Widal Test in Tuberculosis. T. G. Hull and K. Henkes, Springfield.—p. 266.
*Agglutination of Flexner Dysentery Bacillus by Blood Serum of Tuberculous Persons. T. G. Hull and K. Henkes, Springfield.—p. 272.
*Question of Reliable Auscultatory Signs in Diagnosis of Pulmonary Tuberculosis. F. H. Heise, Trudeau, New York.—p. 278.
Case of Hydropneumopericardium in Tuberculous Individual During Attack of Typhoid Fever. F. H. Heise and L. Brown, Trudeau, N. Y.—p. 284.
Tuberculids. E. W. Hayes, Monrovia, Calif.—p. 288.
Spontaneous Pneumothorax. E. W. Hayes, Monrovia, Calif.—p. 297.
Three Cases of Intrathoracic Malignant Tumor Simulating Tuberculosis. J. S. Pritchard, Battle Creek, Mich.—p. 304.

Chaulmoogra Oil for Laryngeal Tuberculosis.—Fifty cases, twelve with moderately advanced and thirty-eight with far advanced pulmonary disease, presenting varying degrees of laryngeal tuberculosis, were observed by Bronfin and Markel over a period of ten and twelve months while under local treatment with chaulmoogra oil and the ethyl esters of the oil. No difference in the action of the two drugs was noted. There was neither an aggravation of the local symptoms nor any improvement. The increased local ulceration noted in a number of cases could not be attributed to any cause other than the irritating effects of the drug. Evidence of its irritation was deduced also from the fact that a number of patients complained of burning, deep in the chest, and referred the pain to the midsternum or xiphoid. Progressive pulmonary cases continued to run a progressive course, while most of those with stationary pulmonary lesions remained unchanged. The pulmonary symptoms and the general clinical course were unmodified. Slight variation in the course and symptoms are common characteristics of phthisis and cannot be ascribed to the use of the oils. In no instance did the cough become diminished or the expectoration less tenacious in character. A follow-up study, with serial roentgenograms in thirty-nine cases failed to disclose satisfactory evidence of new or recent pneumonic consolidation or new areas of infiltration such as could be caused by aspiration.

Value of Organic Mercurial Compounds in Tuberculosis.—Some of the findings noted by DeWitt seem to indicate that in a slowly progressive chronic tuberculosis certain mercurial compounds do bring about a definite fibrosis and healing of tubercles in different organs, such as is not found in any of the control animals, however long they live. One of the most favorable-appearing compounds is a nitrophenol derivative (mercuri-bis-P-nitrophenol) and another is a nitraniline derivative (mono-ethyl P-nitraniline O-mercuric acetate). The small doses used and, hence, the small amount found distributed in the organs may explain the lack of more definite results in these experiments. These compounds, in the doses used, have produced no nephritis in any animal examined, beyond a slight distention of tubules near the capsule and an occasional fibrosis of some glomeruli.

Cause of Fatty Infiltration of Liver in Tuberculosis.—The cause of fatty infiltration in the liver of tuberculous subjects, in Goldberg's opinion, is probably that of "fat retention." The fat is brought to the liver from the adipose tissue fat, but the liver is unable to utilize it and therefore accumulates it.

Fusiform Bacilli and Spirochetes Cause Secondary Infection in Tuberculosis.—Pilot, Davis and Shapiro assert that fusiform bacilli and spirochetes cause secondary infection in pulmonary tuberculosis. They are usually responsible for the fetid expectoration in bronchiectasis and gangrene. Pyogenic bacteria, usually *Streptococcus viridans* or *hemolyticus*, are associated with the fuso-spirochetes in the sputum and the lungs. The sources of infection center about the teeth, tonsils and nasopharynx, which harbor these micro-organisms normally. Prevention of these putrid infections depends on proper care and hygiene of the mouth.

Tubercle Bacilli in Bile.—Tubercle bacilli were found by Corper, Simmons and Freed in the bile postmortem, by guinea-pig inoculation, in four of eighteen cases of far advanced ulcerative pulmonary tuberculosis, in one case of moderately advanced pulmonary tuberculosis and in one case of advanced tuberculosis complicated by aortic aneurysm. The bile, postmortem, from one case each of incipient tuberculosis, pulmonary gangrene and lumbar caries with psoas abscess, and two cases of streptococcus pneumonia and pulmonary abscess, was negative. The authors believe that this finding seems to justify the use of the Meltzer-Lyon duodenal douche diagnostic procedure in sputum-negative and suspected cases of pulmonary tuberculosis for the determination of tubercle bacilli in the bile, as well as in the gastric and duodenal contents.

Widal Test in Tuberculosis.—One hundred specimens were tested by Hull and Henkes by both Widal and tuberculosis-fixation tests. There was agreement in 62 per cent. of the two tests and disagreement in 38 per cent. In checking up the histories of the patients, as far as possible, from the attending physicians, out of 40 cases, 7 were diagnosed definitely as tuberculosis, 4 of which gave positive Widal tests; 26 were diagnosed as doubtful or suspicious for tuberculosis, 14 of which gave some degree of reaction with the Widal test; and 16 were diagnosed as negative for tuberculosis, 9 of which gave partial or complete Widal reactions. It would appear, from many of the histories received, that only a very superficial examination had been made of a large number of the patients. It would seem that advanced cases of tuberculosis are less likely to give positive Widal tests than the earlier cases. The effect of drying of the blood, as in dried blood specimens on parchment paper, apparently makes no difference with the reaction.

Agglutination of Flexner Bacillus by Tuberculosis Blood Serum.—The agglutination reactions for *B. dysenteriae* Flexner with 161 serums from individuals suspected for tuberculosis were almost 60 per cent. positive and 25 per cent. doubtful. Of twelve patients pronounced as being tuberculous by physical examination, nine gave a positive reaction, and three a doubtful reaction. Among twenty-four cases diagnosed as indefinite for tuberculosis, eighteen (75 per cent.) gave positive agglutination tests; four gave a doubtful reaction and two were negative.

Reliable Auscultatory Signs in Diagnosis of Tuberculosis.—Heise asserts that moderate changes in breath sounds are too often found, when clinical pulmonary tuberculosis cannot be diagnosed, to be of value in the diagnosis of this disease. Particularly is this true of bronchovesicular breathing. A negative physical examination of the chest by no means rules out clinical tuberculosis. A negative examination has about the same value as the occurrence of bronchovesicular breathing. Râles heard especially in the upper portion of the lung, and particularly the moderately coarse râles, is a very reliable diagnostic sign of clinical pulmonary tuberculosis. As a matter of fact, it is the only reliable auscultatory sign unless the changes in breathing are very marked. It is not to be inferred, however, that whenever râles are heard clinical pulmonary tuberculosis is always present.

Archives of Neurology and Psychiatry, Chicago

10: 605-724 (Dec.) 1923

Series of Intracranial Tumors and Conditions Simulating Them. H. Cushing, Boston.—p. 605.
*Crural Monoplegia and Paraplegia of Cortical Origin. Cortical Centers for Rectum, Bladder and Sexual Functions. G. Wilson, Philadelphia.—p. 669.
*Psychic Manifestations in Paralysis Agitans. J. A. Jackson, G. B. M. Free and H. V. Pike, Danville, Pa.—p. 682.

Crural Monoplegia Due to Vascular Lesion.—Two cases presented by Wilson were instances of crural monoplegia due to a limited vascular lesion, this being proved in the first case by necropsy. The artery involved in these cases was a branch of the anterior cerebral which supplies the upper part of the motor cortex along the intercerebral fissue extending from the frontal pole to the occipital lobe and on the mesial aspect of the brain from the frontal lobe to the precuneus. Two other cases cited are instances of paralysis of both lower extremities with incontinence of urine and feces, and in one case paralysis of the sexual functions existed due to bilateral lesions.

Psychic Symptoms in Paralysis Agitans.—The five cases cited by Jackson, Free and Pike show that mental manifestations are uncommon in paralysis agitans and that they are frequently overshadowed by the neurologic symptoms. The mental symptoms in paralysis agitans often precede the neurologic signs and lead to erroneous diagnoses. Mental manifestations in paralysis agitans are characteristic, and consist of emotional depression, agitation and psychic pain; hallucinations, generally referable to the organic sensations and the sense of touch; delusions of a somatic, self-accusatory or paranoid nature with resultant attempts at homicide or suicide; and varying defects of memory with little mental confusion.

Atlantic Medical Journal, Harrisburg, Pa.

27: 125-192 (Dec.) 1923

Perils of Present Medical Existence. W. L. Estes, Jr., Bethlehem.—p. 125.
Ophthalmoscope in General Medical Diagnosis. E. Jackson, Denver.—p. 127.
Practical Heliotherapy. W. G. Turnbull, Harrisburg.—p. 132.
Modifications of Pennsylvania's Quarantine Laws. J. M. Campbell, Harrisburg.—p. 134.
Prevention of Diphtheria. J. B. McCreary, Harrisburg.—p. 135.
Child Welfare in Relation to Child Health. E. C. Potter, Harrisburg.—p. 136.
Cystinuria and Cystin Calculi. Case Report. H. C. Flood, Pittsburgh.—p. 141.
Specificity and Sensitiveness of Kolmer's New Complement Fixation Test for Syphilis. J. A. Kolmer, Philadelphia.—p. 143.
Modern Treatment of Fractures. L. F. Stewart, Clearfield.—p. 148.
Focal Infection: Protective Mechanisms of Body Against Infections. R. A. Keilty, Danville.—p. 155.
Use of Coley's Mixed Toxins in Treatment of Chronic Arthritis. T. Klein, Philadelphia.—p. 157.
Recognition of Tonsillar Infection. H. H. Lott, Philadelphia.—p. 160.
Cystitis. P. S. Pelouze, Philadelphia.—p. 163.

California State Journal of Medicine, San Francisco

21: 499-542 (Dec.) 1923

Treatment of Hypertensive Vascular Disease. W. J. Stone, Pasadena.—p. 499.
Diet and Insulin in Diabetes Mellitus. E. S. DuBray, San Francisco.—p. 503.
*Demonstrating Tubercle Bacillus. E. A. Victors, San Francisco.—p. 506.
Gonorrheal Complications and Their Prevention to Certain Points in Treatment of Acute Gonorrhea. J. Steinberg, Los Angeles.—p. 511.
Health Supervision in Schools. F. L. Barney, San Francisco.—p. 515.
Resistance Factor in Focal Infections. H. D. Newkirk, Anaheim.—p. 517.

Flexibility of Ether Vapor Anesthesia. L. A. Rehwilm, San Francisco.—p. 519.
Treatment of Keloids with Radium. L. R. Taussig, San Francisco.—p. 520.
Electrothermocautery Treatment of Leukorrhea Due to Endocervicitis. L. Peters, Alameda.—p. 523.
*Emetin in Typhoid Fever. J. V. Barrow and E. A. Franklin, Los Angeles.—p. 525.

Demonstrating Tubercle Bacillus.—Victors believes that most tuberculous processes, with the exception of deep seated infections, are "open" by the time a physician is consulted and that tubercle bacilli are present in exudate and secretion; that tubercle bacilli are usually demonstrable by present methods; that "negative" findings from repeated examinations of total specimens taken over a period of days are of exclusional value; that "negative" biologic tests are not necessarily conclusive; that a "safe" biologic diagnosis can be made in fourteen days; that the presence of typical fuchsin-fast rods in properly taken specimens is sufficient to warrant the diagnosis of tuberculosis.

Emetin in Typhoid; Association of Intestinal Protozoa; Hemoclastic Crisis.—Two observations hitherto unreported, have been carefully worked out by Barrow and Franklin and the results noted. The first of these is the lack of association of intestinal protozoa in typhoid; the second is the early and almost constant occurrence of a positive "hemoclastic crisis." The routine use of emetin in typhoid fever has seemed to shorten the course markedly, lessen complications, and save life. Its use has seemed to have a great influence in rendering every convalescent free from typhoid bacilli, so that the carrier will become as scarce as the disease ought to be.

Illinois Medical Journal, Oak Park

44: 381-448 (Dec.) 1923

Maternal and Infant Welfare Without Government Bureaucracy. W. D. Chapman, Silvis.—p. 404.
Councilor, His Duty to State and County Societies. C. S. Nelson, Springfield.—p. 407.
Common Mydriatics and Cycloplegics. G. H. Mundt, Chicago.—p. 411.
*Diagnosis of Myxedema in Adults. Treatment with Thyroxin. A. S. Jackson, Madison, Wis.—p. 415.
Trend in Medicine. H. N. MacKechnie, Chicago.—p. 421.
Cervical Ribs and Exostoses. Five Cases. J. F. Sloan, Peoria.—p. 423.
Modification of Thimble for Use in Gastro-Intestinal Work. W. J. Sullivan, Chicago.—p. 427.
Rendering Syphilitic Noninfecticus Public Health Problem. J. Welfeld, Chicago.—p. 428.
Errors in Diagnosis of "Surgical Abdomen." R. McReynolds, Quincy.—p. 430.
Medicine and Public Press. T. G. Atkinson, Chicago.—p. 435.
*Chaparro Amargosa in Amebic Dysentery. A. A. Goldsmith and E. I. Greene, Chicago.—p. 437.
Varix, With and Without Ulcer, of Leg; Ambulatory Treatment. F. C. Schurmeier, Elgin.—p. 440.

Basal Metabolism in Myxedema.—Jackson has found that 50 mg. of thyroxin, administered intravenously, is required to bring the basal metabolic rate of a myxedematous patient to within normal limits. A variable daily dose of from 0.8 to 2 mg. of thyroxin by mouth is required to maintain this level. Improvement following the administration of thyroxin is spectacular and almost immediate. The mentality, facial expression, voice, body temperature, weight, skin and general appearance rapidly return to normal and edema disappears.

Chaparro Amargosa in Amebic Dysentery.—*Chaparro amargosa* means "bitter bush," *Castela nicholsoni* Hook, and is supposed to belong to the family Simarubacea. *Chaparro amargosa* is a small thorny bush indigenous to southwest Texas and northern Mexico. All parts of the plant, from the root to the berry, possess the characteristic bitter taste and medicinal properties. Goldsmith and Greene do not believe that this drug should supplant ipecac and its alkaloid; however, there are certain cases which are rebellious to the usual treatment, and in these cases this drug should be given a trial. Six or 8 ounces of the infusion are given by mouth, one-half hour before each meal; rectal enemas of from 500 to 2,000 c.c. of the infusion are given in the knee-chest posture twice daily and the patient is instructed to retain the solution as long as possible. It is advisable to continue the treatment for a week or two after the subsidence of all symptoms *Chaparro amargosa* seems to be specific for *Endameba histolytica*. It has no effect on other intestinal parasites and also is not at all efficacious in other forms of dysentery.

Johns Hopkins Hospital Bulletin, Baltimore

34: 401-432 (Dec.) 1923

*Recurrent Complete Heart Block with Normal Conduction Between Attacks. E. P. Carter and F. P. Dieuaide, Baltimore.—p. 401.
*Universial Lymphatic Leukemia of Skin. L. W. Ketron and L. N. Gay, Baltimore.—p. 404.
*Asthma and Infections of Accessory Nasal Sinuses. C. A. Heatly and S. J. Crowe, Baltimore.—p. 410.
*Dissemination of Hemolytic Streptococci Among Group of Healthy People. A. L. Bloomfield and A. R. Felty, Baltimore.—p. 414.
Phagocytic Activity of Hemal Glands in Sheep. H. H. Woollard and G. B. Wislocki, Baltimore.—p. 418.
Effect of Pyrogallic Acid on Connective Tissue Cells of Chick Embryo in Tissue Cultures. J. T. Bauer, Baltimore.—p. 422.
*Case of Carcinoma of Fourchette. L. Brady, Baltimore.—p. 426.

Recurrent Complete Heart Block.—A case of intermittent complete heart block and syncope, with normal auriculoventricular conduction intervening, is reported by Carter and Dieuaide. Respiratory and clinical data suggest that the resting ventricular output must have increased in the presence of heart block almost in proportion to the fall in rate. The reported cases of this type are said to indicate that there is usually a progressive anatomic lesion of the auriculoventricular bundle and that the prognosis is unfavorable. The warning is repeated that the atropin test is not necessarily conclusive as to the pathogenesis of heart block.

Lymphatic Leukemia of Skin.—Ketron and Gay record a case that is a typical example of lymphatic leukemia with dense infiltration of the cutis with lymphoid elements. It is suggested that the apparent rarity of this type of cutaneous involvement in lymphatic leukemia is probably due, in part at least, to insufficient blood studies in cases of this character. Roentgen-ray treatments to the skin brought about little improvement.

Asthma and Infections of Accessory Nasal Sinuses.—The therapeutic possibilities in asthmatic states of operations on the nose and accessory nasal sinuses were investigated by Heatly and Crowe in sixty-two cases. There is only one patient in the series who, writing after three years, is enthusiastic enough to describe himself as "cured." Although fifty-three patients admit that they have been improved, only nine patients remained unimproved. In fourteen cases there was recurrence after temporary improvement. The authors condemn indiscriminate operations on the nose and accessory nasal sinuses of asthmatics and urge that operative measures be undertaken as part of a general therapeutic program.

Differentiation of Hemolytic Streptococci.—Attention is called by Bloomfield and Felty to the necessity of differentiating in clinical bacteriology between hemolytic streptococci of the true disease producing or beta type and the very similar but essentially nonpathogenic alpha prima type (Brown).

Carcinoma of Fourchette.—There have been 165,000 admissions to the Johns Hopkins Hospital since it opened, and of these 29,000 have been assigned to the gynecologic service. Among these 29,000 there have been nineteen instances of primary carcinoma of the vulva. During this same period there have been seen 756 cases of carcinoma of the cervix. These nineteen malignant growths of the vulva arose in the following situations: six from the clitoris, one from a Bartholin's gland, two from the urethra, five from a labium majus, one from a labium minus, one from the fourchette, and four were indexed simply as carcinoma of the vulva. In these last four cases, when the patient was first seen, the growth was so extensive that it was impossible to tell exactly where it had originated. All the carcinomas, except two, were found, under the microscope, to be of the squamous cell type. The two exceptions were adenocarcinomas, showing a definite glandular arrangement. One was known to have arisen from a Bartholin's gland; the other was too far advanced to permit of a more definite conclusion being reached as to its origin than that it had arisen from the vulva. Brady adds a case of primary carcinoma of the fourchette which he saw in private practice. His patient was 35 years of age. In 1913, ten years after the contraction of a syphilitic infection, the patient developed a lesion of the vulva. This lesion had persisted from that time and had slowly increased in size. There had been no noticeable increase in rapidity of growth during the last few years. Brady removed the lesion. MacCallum

examined the microscopic slides and reported: epithelioma with a great deal of keratinization.

Journal of Experimental Medicine, Baltimore

38: 655-768 (Dec. 1) 1923

*Absorption of Epinephrin. D. M. Lyon, Edinburgh, Scotland.—p. 655.
*Biology of Tissue Cells. I. Relation of Cell Crowding to Tissue Growth in Vitro. A. Fischer, Copenhagen, Denmark.—p. 667.
*Studies on Varicella. Susceptibility of Rabbits to Virus. T. M. Rivers and W. S. Tillett, New York.—p. 673.
*Etiology of Typhus Fever. V. Survival of Virus in Collodion Sacs Implanted Intra-Abdominally in Guinea-Pig. P. K. Olitsky and J. E. McCartney, New York.—p. 691.
Inclusion Bodies in Experimental Herpetic Infection of Rabbits. E. V. Cowdry and F. M. Nicholson, New York.—p. 695.
Factors Underlying Formation of Alveolar Pores in Pneumonia. W. S. Miller, Madison, Wis.—p. 707.
*Roentgen-Ray Intoxication. I. Bacterial Invasion of Blood Stream as Influenced by Roentgen-Ray Destruction of Mucosal Epithelium of Small Intestine. S. L. Warren and G. H. Whipple, Rochester, N. Y.—p. 713.
Id. II. Cumulative Effect or Summation of Roentgen-Ray Exposures Given at Varying Intervals. S. L. Warren and G. H. Whipple, Rochester, N. Y.—p. 725.
Id. III. Path of Beam of Hard Rays in Living Organism. S. L. Warren and G. H. Whipple, Rochester, N. Y.—p. 731.
Id. IV. Intestinal Lesions and Acute Intoxication Produced by Radiation in Variety of Animals. S. L. Warren and G. H. Whipple, Rochester, N. Y.—p. 741.

Absorption of Epinephrin.—Blood pressure curves were used by Lyon to secure information regarding the processes of absorption and utilization of epinephrin. Given subcutaneously it is usually rapidly absorbed, probably by lymph channels. The relative amounts remaining at any moment unabsorbed at the site of inoculation, carried in the circulating fluids and taken up by the reacting tissues, can be calculated from figures extracted from the curve of the blood pressure changes. The relative rates of transference into the blood and from the circulation into the tissues can also be estimated. When absorption takes place rapidly a large quantity of the drug comes into action at once and the maximum occurs early; the curve of blood pressure reaches a considerable height, and subsides quickly. When absorption is slow, the apex appears later and does not reach so high a level. The response to epinephrin bears a logarithmic relationship to the dose employed and a method of allowing for this is indicated.

Cell Crowding and Tissue Growth.—A method is described by Fischer by which it is possible to scatter isolated tissue cells in a suitable medium. Experiments were undertaken to determine whether minute fragments of fibroblastic culture are able to persist and multiply when transferred into a new culture medium. Cell divisions were not observed in isolated cells under the conditions of the experiment. Growth took place only when the tissue cells were numerous and close to one another.

Virus of Chickenpox in Blood.—Observations made by Rivers and Tillett on patients indicate that the virus of chickenpox probably is present in the blood, and that the localization of the virus in the human skin is influenced by irritation. This is indirect evidence that the virus is in the blood. Rabbits are susceptible to a virus recovered from the blood of varicella patients. Testicular emulsions containing the virus are free from ordinary aerobic and anaerobic bacteria, and produce lesions in the cornea, skin and testes of rabbits. The virus can be transmitted indefinitely from rabbit to rabbit by means of testicular inoculation, and can be preserved twenty-nine days in 50 per cent. glycerol at a low temperature.

Survival of Typhus Virus.—Olitsky and McCartney found that the typhus virus contained in the blood of guinea-pigs at the height of the experimental disease remains infective for thirty-one days in collodion sacs placed within the abdominal cavity of guinea-pigs.

Roentgen Ray Destroys Intestinal Epithelium But Does Not Increase Bacterial Invasion.—Experiments made by Warren and Whipple show that the roentgen ray has a specific effect on the epithelium lining the crypts and covering the villi of the small intestine. A suitable dose will destroy this epithelium in large measure, leaving empty crypts and naked villi exposed to swarms of bacteria in the intestine. Subsequently there is not an overwhelming invasion of the tissues, lymph and blood by intestinal bacteria. It seems obvious, therefore, that the intestinal epithelium is not the all important barrier which protects the tissues from invasion by intestinal bacteria.

Clinical Intoxication Parallels Injury to Intestinal Epithelium by Roentgen Rays.—It is evident that a single large dose of roentgen rays over the abdomen will cause definite injury of the mucosa of the small intestine and the severity of the clinical intoxication seems to parallel this recognizable epithelial injury. This clinical intoxication lasts from four to six days if the roentgen-ray dose is sublethal. Subsequent doses of radiation given within this period of clinical intoxication give recognizable evidence of summation or cumulative effect. Small, repeated doses of radiation given within a five or six day period will cause practically the same cell injury and clinical intoxication as a single dose representing the sum of the small doses expressed in milliampere minutes. Doses of radiation given at six day or longer intervals show no evidence of summation.

Path of Roentgen Rays in Tissues.—According to Warren and Whipple roentgen rays which injure intestinal epithelium (and presumably other body or tumor cells) travel in straight lines from the target through the living tissues, forming a cone or beam of rays as controlled by impervious screens.

Intestinal Lesions Produced by Irradiation.—The data obtained by Warren and Whipple strengthen their belief in the scattered and incomplete observations in human cases which indicate that the human intestinal tract is sensitive to radiation. This fact must be given careful consideration in conditions in which abdominal or pelvic radiation is being used because such injury done to intestinal epithelium is always serious and in some cases irreparable.

Journal of Industrial Hygiene, Boston

5: 279-314 (Dec.) 1923

Relation of Industrial Medicine to General Practice. H. Myers, Mansfield, Ohio.—p. 288.
Prevention, Rehabilitation, and Medicolegal Aspects of Sprained Back. J. N. Bassin, Brooklyn.—p. 293.
Mental Hygiene in Industry: Malingering. F. W. Dershimer, Cleveland.—p. 299.
Can Sick Benefit Associations Profitably Engage in Disease Prevention Work? L. R. Thompson and D. K. Brundage, Washington, D. C.—p. 305.

Journal of Laboratory and Clinical Medicine, St. Louis

9: 141-216 (Dec.) 1923

Significance of Nitrogen Estimations in Blood in Arterial and Kidney Disease. I. J. Levy, New York.—p. 141.
*Capillary Blood Pressure in Arterial Hypertension and Nephritis. E. P. Boas and I. Mufson, New York.—p. 152.
*Blood Oxygen Changes Following Therapeutic Bleeding in Cardiac Patients. S. B. Grant, Boston.—p. 160.
*Antiphlogistic Effects of Salicylate, Cinchophen and Neocinchophen in Experimental Edema of Head and Neck. P. J. Hanzlik and M. L. Tainter, San Francisco.—p. 166.
*Pharmacology of Sodium Citrate. I. Circulation. G. B. Love, Chicago.—p. 175.
*D'Herelle's Phenomenon. E. B. McKinley, Dallas, Texas.—p. 185.
Iso-amyl Ethyl Barbituric Acid—Anesthetic Without Influence on Blood Sugar Regulation. I. H. Page, Indianapolis.—p. 194.
Artificial Respiration and Ether Apparatus for Use with Compressed Air. H. F. Pierce, New York.—p. 197.
Kolmer Quantitative Test for Syphilis. Comparison with Technic Using Anti-Hen Hemolytic System. C. W. Maynard, Pueblo, Colo.—p. 199.
*Quantitative Method for Determination of Total Phosphorus in Blood. C. S. Smith and A. L. Brown, Columbus, Ohio.—p. 203.
*Convenient Method of Determining Phenolsulphonephthalein Output in Urine. V. E. Rothberg, Pittsburgh.—p. 206.

Capillary Blood Pressure in Arterial Hypertension.—Forty-five patients with arterial hypertension were studied by Boas and Mufson over a period of from six to fifteen months. Of the seventeen with high capillary pressures only five have died. Necropsy studies and observations on two patients with scarlatinal nephritis do not support the theory that high capillary pressures are indicative of glomerulonephritis. In most patients the capillary readings taken at long intervals are constant. With few exceptions, high capillary pressures are accompanied by high diastolic pressures, and in these cases there is a certain parallelism between the two pressures. In patients with hypertension nitroglycerin lowers both the arterial and the capillary blood pressures. A case of subacute

nephritis with normal blood pressure and high capillary pressure is reported.

Blood Changes Following Therapeutic Bleeding.—The oxygen content of the arterial and venous blood before and after therapeutic venipuncture was studied by Grant in seven acutely decompensated cardiac patients. Therapeutic bleeding produced an improvement in the peripheral circulation, as evidenced by a decrease in the coefficient of utilization of oxygen. When the arterial oxygen saturation was considerably below normal, and the heart not so seriously damaged as to be unable to respond to treatment, bleeding was followed by an increase in the arterial oxygen saturation, indicating improved efficiency of the pulmonary circulation.

Antiphlogistic Effects of Salicylate, Cinchophen and Neocinchophen.—Experimental edema of the head and neck produced by the systemic administration of paraphenylendiamin in rabbits was not beneficially influenced by previous and simultaneous treatment of the animals with sodium salicylate, cinchophen and neocinchophen in large doses corresponding to the clinical "toxic" dosage used in the treatment of acute rheumatic fever. If anything, these drugs tended to aggravate this pathologic condition. All hastened death, but especially cinchophen, which, in addition, favored the occurrence of peritoneal and pleural exudates. The increase in blood concentration, which accompanied the edema of paraphenylendiamin, remained unchanged by the administration of salicylate, cinchophen and neocinchophen, except shortly preceding, or at time of, death when it was lowered, but this also occurred at death with paraphenylendiamin alone, and, therefore, cannot be attributed to any peculiarity or specificity of these drugs. Therefore, taking everything into consideration, Hanzlik and Tainter assert the alleged antiphlogistic actions of salicylate, cinchophen and neocinchophen, when tested under these conditions, were found to be wanting, and so far as salicylate and cinchophen are concerned, this agrees with the negative results of other investigators who treated other kinds of edemas. The beneficial therapeutic effects of these drugs in rheumatic fever appear to be produced neither through etiotropic nor organotropic, but rather through symptomatic action, the benefits being mediated through antipyresis and analgesia.

Pharmacology of Sodium Citrate.—Love made these observations: The heart muscle of dogs is depressed by doses of 30 mg. sodium citrate per kilogram or more. The vasomotor, cardio-inhibitor and cardio-accelerator centers are stimulated. The endings of the accelerator nerves to the heart are markedly stimulated by large doses. There is some evidence that large doses cause active dilatation of the vessels of the kidney. Plethysmograph tracings of the extremities and intestines show no peripheral action on blood vessels. Sodium citrate in the dose used and at the rate injected when blood transfusions are made produced no appreciable effect on the circulation which would militate against its use as an anticoagulant.

D'Herelle's Phenomenon.—McKinley has examined a large variety of pathologic and normal tissues of both man and animals. Of some thirty-six different sources examined he has found bacteriophages in seventeen. The "substance" is lytic in nature; it is transmissible in series; it is polyvalent in nature in some cases when first isolated, or admits of adaptation when tested for this property; it produces the characteristic areas in solid cultures making possible their enumerations, and produces the abnormal colonies on plate subcultures. McKinley believes this "substance" to be a true bacteriophage.

Determining Phosphorus in Blood.—A method is described by Smith and Brown for the determination of total phosphorus in the blood, based on titrating the well known yellow precipitate with one-tenth normal sodium hydroxid. The method is said to differ from others in the procedure followed to convert the phosphorus in the blood into phosphoric acid.

Determining Phenolsulphonephthalein Output.—In accordance with the technic originally outlined by Rountree and Geraghty for determining the amount of phenolsulphonephthalein eliminated in the urine after injection of the dye, the urine in Rothberg's method is rendered alkaline by the addition of sodium hydroxid and is diluted to 500 or 1,000 c.c. and read against a known standard in a suitable colorimeter.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

22: 215-328 (Nov.) 1923

Pharmacology and Toxicology of Carbon Tetrachloride. P. D. Lamson, G. H. Gardner, R. K. Gustafson, E. D. Maire, A. J. McLean and H. S. Wells, Baltimore.—p. 215.
Oxytocicpressor Diuretic Principle of Infundibular Portion of Pituitary Gland. J. J. Abel, C. A. Rouiller and E. M. K. Geilung, Baltimore.—p. 289.
Therapeutic Study of Active Principle of Infundibular Portion of Pituitary Gland in Four Cases of Diabetes Insipidus. J. J. Abel and E. M. K. Geiling, Baltimore.—p. 317.

Pituitary Gland in Diabetes Insipidus.—Abel and Geiling present proof that pituitary tartrate prepared by them possesses the antidiuretic property, and that it may be administered effectively by the nasal route. No untoward reactions of any kind were noted after the use of this preparation. A patient was receiving 4 drops of a solution of 0.5 mg. per cubic centimeter in each nostril every three hours without ill effects.

Michigan State Medical Society Journal, Grand Rapids

22: 495-542 (Dec.) 1923

*Method of Shortening Cecum. A. McLean, Detroit.—p. 495.
Endocervicitis. A. E. Catherwood, Detroit.—p. 497.
Cervical Lacerations with Resulting Ectropion and Erosion. Prevention and Treatment. H. H. Cummings, Ann Arbor.—p. 499.
Osteomyelitis of Hemotogenous Origin. L. M. Bogart, Flint.—p. 502.
Use of Insulin in Diabetes Mellitus. P. L. Marsh, Ann Arbor.—p. 507.
Goiter in Pregnancy. C. E. Boys, Kalamazoo.—p. 511.
*Differentiation of Diabetic Coma and Hyperinsulemia; Progressive Development of Diabetes in an Infant. D. M. Cowie, Ann Arbor.—p. 516.
Symblepharon Relieved by Use of Wax Mold and Thin Skin Grafts. W. R. Parker, Detroit.—p. 517.
Vitamins and Baby. J. Brennemann, Chicago.—p. 519.

Shortening the Cecum.—McLean does not recommend an abdominal operation for this condition alone, but when the abdomen is open and the cecum appears lengthened, or when an operation is advised for the removal of the appendix and the long cecum is present, he puckers up the longitudinal muscle fibers.

Differentiation of Diabetic Coma and Hyperinsulemia.—Cowie reports a case to show that the manifestations of diabetic coma and those of an overdose of insulin may be mistaken for each other, and particularly that the manifestations of diabetic coma may be attributed to an overdose of insulin.

Minnesota Medicine, St. Paul

6: 677-729 (Dec.) 1923

Diagnosis of Chronic Cholecystitis. J. P. Schneider, Minneapolis.—p. 677.
Roentgenologic Diagnosis of Chronic Cholecystitis. F. S. Bissell, Minneapolis.—p. 681.
Surgical Diagnosis of Gallbladder Disease. H. P. Ritchie, St. Paul.—p. 683.
Surgical Treatment of Diseases of Gallbladder and Bile Channels. A. Schwyzer, St. Paul.—p. 688.
Recurrent Ulcer of Stomach and Duodenum. G. B. Eustermann, Rochester.—p. 698.
Association and Fair Play. J. D. Denegre, St. Paul.—p. 702.
Has Medical Profession Lost Position It Once Held in Esteem of Public? F. J. Savage, St. Paul.—p. 705.

Radiology, Chicago

1: 129-191 (Nov.) 1923

Roentgenologic Diagnosis of Diseases of Colon. R. D. Carman and S. Fineman, Rochester, Minn.—p. 129.
Objections to Use of "One Lethal Dose" Method in Malignancy. C. H. Nims, Hot Springs National Park, Ark.—p. 143.
Treatment of Malignant Disease of Cervix with New Higher Voltage, Shorter Wave Length Roentgen Rays, Radium and Electrothermic Coagulation. J. T. Stevens, Montclair, N. J.—p. 148.
Standardization of Roentgen Ray Output. F. Rieber, San Francisco.—p. 153.
Radiation Treatment of Hodgkin's Disease with Particular Reference to Mediastinal Involvement. A. U. Desjardins, Rochester, Minn.—p. 161.
Radiotherapy of Menorrhagias of Menopause and Uterine Fibroids. L. J. Carter, Brandon, Manitoba.—p. 172.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 1127-1192 (Dec. 15) 1923

Life and Times of William Clift. A. Keith.—p. 1127.
Recurrent or Habitual Dislocation of Shoulder-Joint. A. S. B. Bankart.—p. 1132.
*Treatment of Migraine by Calcium Lactate. A. D. Bigland.—p. 1133.
*Nature and Treatment of Sprue. H. H. Scott.—p. 1135.
Chronic Bronchitis. J. J. Perkins.—p. 1137.
*Vaccine Therapy of Chronic Bronchitis. J. O. Symes.—p. 1139.
*Climatic Treatment of Chronic Bronchitis. E. H. Graves.—p. 1140.
Id. M. G. Foster.—p. 1141.
Chronic Bronchitis in Relation to Nose and Throat Infections. G. S. Hett.—p. 1142.
Life History and Bionomics of Phlebotomus Papatasii. H. E. Whittingham and A. F. Hook.—p. 1144.
*Intestinal Spasm Due to Ascaris Lumbricoides. H. Harris.—p. 1151.
Twin Pregnancy in Bicornuate Uterus with Contracted Pelvis. J. Lamb.—p. 1152.
Roentgen-Ray Treatment of Interstitial Keratitis. H. H. Bywater and F. C. Plummer.—p. 1152.

Calcium Lactate for Migraine.—Bigland has used calcium lactate in migraine with success. At the first sign of the approach of an attack, as evidenced by the ocular aura, 30 grains of calcium lactate must be taken immediately. As there must be no delay, the drug must be constantly carried by sufferers, and for this purpose the tablet form is essential. The tablets must be fresh. No claim is made that calcium lactate cures migraine, merely that it aborts the attack and in many cases prevents the appearance of the headache and vomiting and enables the sufferer to continue at work.

Calcium Deficiency in Sprue a Parathyroid Dysfunction.—The manifestation of carpopedal spasms in an intractable case of sprue led Scott to think of the peculiar association of carpopedal spasms with calcium deficiency, the correlation possibly of these with the diarrhea and intestinal toxins, referring them to the group of organs which have been credited with the control of both these conditions—the parathyroids. The administration of calcium lactate led to temporary improvement only, but when parathyroid extract was given all the more acute symptoms disappeared and the patients got well and remained well. Scott points out that the amount of calcium in the blood does not depend solely, or even in the main, on the amount of calcium salts taken in the food or as medicine, but on the efficiency of the calcium-regulating mechanism—the parathyroids with their twofold function of detoxication and regulation of calcium metabolism. Calcium deficiency is, therefore, regarded as an indication of toxin absorption. In cases of sprue in which fats are in excess there is an excessive excretion of calcium in addition to intoxication of intestinal origin; in other cases there is protein excess with intestinal toxin formation. In both groups, the parathyroid detoxicating function is overburdened, with a resultant disorganization of its calcium regulating function, while there may be in addition diminished calcium absorption. Both functions, therefore, of these glands are interfered with.

Vaccine Therapy of Chronic Bronchitis.—Symes uses autogenous vaccines in the treatment of chronic bronchitis. Care in the preparation of the vaccine is of the greatest importance. Stock vaccines are not likely to meet with more than a modicum of success.

Climatotherapy of Chronic Bronchitis.—In the treatment of chronic bronchitis, Graves insists, climate plays an important part, and in selecting a suitable winter climate it is essential to bear in mind certain important points—namely, equability of temperature, sunshine, shelter from wind (especially from the north and east), and dryness of subsoil. Graves is convinced that the custom of keeping chronic bronchitics in overheated rooms is largely responsible for keeping up and increasing their susceptibility to changes of temperature. The habit of deluging the unfortunate patient with drugs of the expectorant variety is deprecated. The use of vaccines is urged as a treatment and as a prophylatic measure to protect the patient against acute exacerbation of the catarrh.

Ascaris Lumbricoides Causes Intestinal Spasm.—In the course of an operation for appendicitis Harris pulled up into the wound a piece of small intestine which appeared to be in a state of spasm, the free border forming a firm, hard, rounded cord about three-eighths inch in thickness; the rest of the walls were in accurate apposition. This condition was traced above and below for about 10 inches in all, the "cord" tapering off at each end. The intestine immediately above and below was quite normal. The cordlike appearance was due to the wall of the bowel at its free border firmly embracing an *Ascaris lumbricoides*.

China Medical Journal, Shanghai

37: 887-978 (Nov.) 1923

Bacteriology of Trachoma. D V. Smith.—p. 887.
*Treatment in China of Tuberculosis of Knee Joint. T. Stearns.—p. 891.
Renal Infections: Their Guises and Disguises. H. W. S. Wright.—p. 902.
Hospital Stock Mixtures. H. O. Chapman.—p. 915.
Standard Pharmacologic Formularies: Immediate Need in China. B. E. Read.—p. 925.
*Occurrence of Tenia Saginata in North China. R. G. Mills.—p. 932.

Tuberculosis of Knee Joint in China.—Thirteen cases are recorded by Stearns. In the case of adults in poor economic condition, if there is no pulmonary contraindication, he resects the joint as soon as a positive diagnosis is made. In the early state in adults who are in good circumstances conservative treatment (a splint or a cast) may be used as long as there seems to be no progression of the disease; but even in these he is inclined to advise resection as soon as the diagnosis is made. In the early stage in children, when the economic and home conditions are good, he gives conservative treatment a trial. If there is no improvement after nine months or a year, or if there is progression of the disease, and if there is no pulmonary contraindication, then he resects. In adults if the general condition is poor or if there is an incipient pulmonary tuberculous process, Stearns amputates above the knee. In children, if the general condition is poor, or if there is an incipient pulmonary tuberculous process, he tries conservative treatment for about six months. If the general condition does not improve, then he amputates. When the general condition is good a sinus form the joint is not a contraindication to resection of the joint. Mortising the two bones is the method of choice. Joining the two bones with bone plates Stearns found, gives a quicker bony union than when the bones are united with kangaroo tendon sutures through holes bored on the two sides of the joint.

Tenia Saginata in China.—A case of *Cysticercus bovis* infestation from beef offered for sale in Peking is reported by Mills as the first instance of its observation in China. *Taenia saginata* has been discovered or suspected in twelve cases during two years among about 4,500 hospital cases. Two patients were foreigners and ten were orientals. All contracted their infection in Peking. The Chinese methods of preparing beef are apparently effective in most instances, but suspicion points to restaurants in which haste and carelessness in the preparation of food may allow an occasional infestation to take place.

Journal of Tropical Medicine and Hygiene, London

26: 349-360 (Dec. 1) 1923

*Suggestion as to Cause of So-Called "Blackwater Fever" Treatment and Prophylaxis. W. A. Young.—p. 349.

Blackwater Fever a Complication of Malaria.—"Blackwater fever" Young regards not as a disease per se, but only a complication of a severe infection with malaria. This complication, which might occur, and sometimes does if the patient can survive otherwise, is made premature by the exhibition of a certain dose of quinin usually larger than the patient is accustomed to take. Its action on the large number of severely poisoned cells accounts for the explosive character of blackwater fever. Young insists that it should be called "malarial hemoglobinuria." The presence of polychromatocytes is of great diagnostic value as to the presence of obscure malaria. Any factor which impairs the body's efficiency may turn a not too severe attack of malaria into one of malarial hemoglobinuria.

Lancet, London

2: 1221-1284 (Dec. 8) 1923

Uses of Digitalis. G. A. Sutherland.—p. 1221.
*Epidemiology of Malaria in Southeast Russia. M. D. Mackenzie.—p. 1225.
*Rheumatic Carditis. M. O. Raven.—p. 1227.
Spinal Anesthesia and Its Drawbacks. B. Desplas.—p. 1233.
*Treatment of Rhinolaryngologic Tuberculosis by Finsen Light Baths, and Results. O. Strandberg.—p. 1236.
Large Pharyngeal Diverticulum. Cured by Two Stage Operation. I. Back and L. Colledge.—p. 1237.

Epidemiology of Malaria in Russia.—The present widespread epidemic of malaria in South Russia is of deep interest. Over enormous tracts of land, where subtertian malaria was unknown and tertian malaria rare, these diseases are now almost pandemic—up to 90 per cent. of the population being affected in many areas. Points of interest in the epidemic as seen by Mackenzie are: (1) The rapid spread of the epidemic in the extremely cold winter months in Russia. (2) The mode of spread through the means of the infected water-butts of the peasants' houses. (3) The fact that subtertian malaria reached its maximum in November, December and January and afterward almost disappeared. (4) The monthly alteration in the quartan incidence. (5) The extreme susceptibility of a population weakened by famine and disease. (6) The small number of relapses (including reinfections) after prolonged quinin treatment. (7) The pandemic nature of the outbreak.

Rheumatic Carditis.—Raven asserts that it would be in the end an economy of time and money as well as of health if every child who had shown any manifestation of rheumatic disease were sent to the country for a long term of rest or quiet life, just as tuberculous cases are sent away. The fact that in some cases the child does not feel ill at all until the heart has suffered irretrievable damage points to the absolute need for constant supervision of the heart in the early stages of the disease, and such constant supervision cannot be carried on effectively under the general conditions obtaining at present; similarly, the carrying out of adequate after-care in cases discharged from the hospitals is at present exceedingly difficult to manage. Early and prolonged treatment and regular and prolonged after-care are the most important requirements in the management of acute rheumatism today.

Finsen Light Baths for Tuberculosis of Larynx.—Strandberg claims to have 53 per cent. of cures of tuberculosis of the larynx following treatment by Finsen light baths.

2: 1285-1332 (Dec. 15) 1923

*Traumatic Neurasthenia. E. F. Buzzard.—p. 1285.
*Syphilis as Complication of Tuberculosis. A. K. Bowman.—p. 1288.
Intracranial Birth Injuries. H. C. Cameron.—p. 1292.
Pellagra in British Islands. A. D. Bigland.—p. 1295.

Traumatic Neurasthenia an Anxiety Neurosis.—Buzzard holds to the view that the signs and symptoms of traumatic neurasthenia are those of an anxiety neurosis, complicated by certain factors, and that it should be regarded as an emotional state, dependent not on any physical disturbance caused by trauma but on a number of psychologic factors. Although the knowledge that an injury has been sustained exerts a powerful influence in the development of neurasthenia, the latter is not the result of trauma. Buzzard prefers the term "anxiety neurosis following trauma." He urges the importance of early diagnosis and proper treatment.

Syphilis as Complication of Tuberculosis.—The results of blood examination by the Wassermann reaction in 500 patients resident in the City of Glasgow Sanatorium were summarized by Bowman. It appears that the incidence of a positive Wassermann reaction has not been found to be more frequent among the tuberculous than among the general population, 9.42 per cent. in the former and 14 per cent. in the latter. Syphilis of the lungs, existing as an isolated disease, is extremely rare, but it may be that a number of cases recognized as pulmonary tuberculosis and in which the Wassermann reaction is positive are in reality cases of combined syphilis and tuberculosis of the lungs. The two diseases when coexistent in the same individual may modify each other. In cases in which syphilis and tuberculosis are present in the same individual, the administration of arsphenamin and its analogues may be followed by disaster. If organic arsenic is used, it should be administered in extremely small doses and at wide intervals. If no disturbance follows the injections, treatment may be continued cautiously, but it should be at least temporarily suspended if focal or general reactions occur, and the condition should be carefully watched. Organic arsenic compounds may be useful in cases in which the diagnosis is doubtful, but it is unjustifiable to employ them for diagnostic purpose save with extreme care, always having in mind the possibility of a tuberculous flare-up.

Medical Journal of Australia, Sydney

2: 483-506 (Nov. 10) 1923

Modern Views of Asthma, Hay-Fever and Allied Disorders Such as Urticaria, Angioneurotic Edema and Serum Sickness. L. A. I. Maxwell.—p. 483.
Meningitis Following Influenza. F. J. A. Grant.—p. 491.
Aneurysm of Left Subclavian Artery. Ligature in First Part. J. Corbin. —p. 492.
Osteomyelitis of Frontal Bone Secondary to Acute Infection of Both Frontal Sinuses. C. F. Warren.—p. 493.
*Unusual Incident Following Tonsillotomy. A. A. Lendon and R. H. Pulleine.—p. 493.

Aspiration of Tonsil During Removal.—Lendon and Pulleine report a case in which during the removal of tonsils one of them was aspirated and remained lodged in the main right bronchus for about eleven hours, causing an obstruction. Finally the child became violently sick, vomited, and in the material ejected there was found the tonsil. Immediate improvement occurred. No unpleasant symptoms followed this incident.

2: 507-534 (Nov. 17) 1923

Tuberculosis in Ex-Soldiers. W. H. Steel.—p. 507.
Treatment of Some Common Disturbances of Sexual Function in Male. N. M. Gibson and C. J. Wiley.—p. 512.
*Mediastinal Displacement: Its Influence on Treatment of Pulmonary Tuberculosis by Artificial Pneumothorax. J. G. Hislop.—p. 514.
*Intermittent Hydronephrosis. W. A. Hailes.—p. 518.

2: 535-560 (Nov. 24) 1923

Jenner (1749-1823). A. A. Lendon.—p. 535.
Staining Reactions of Hydatid Cysts. G. Cameron.—p. 541.
Severe Diabetes Treated with "Insulin." D. M. McWhae.—p. 544.
Volvulus of Stomach. W. A. Hailes.—p. 544.
Multiple Papilloma of Larynx. H. B. Gill.—p. 545.

2: 561-584 (Dec. 1) 1923

Surgical Treatment of Osteo-Arthritis of Hip Joint. D. J. Glissan.—p. 561.
Psychotherapy in Practice. R. A. Noble.—p. 564.
Bacteriologic Diagnosis of Diphtheria and Carrier Problem. G. H. Burnell and D. L. Barlow.—p. 569.
Case of Scurvy. C. Madden.—p. 571.
Two Deaths from Eating "Toad Fish." A. J. Metcalfe.—p. 571.

Influence of Mediastinal Displacement on Pulmonary Tuberculosis.—The influence of the mediastinal displacement on the results obtained by the treatment of pulmonary tuberculosis in specially selected cases by means of artificial pneumothorax, Hislop says, is unquestionably great. The suggestion is made that excessive mediastinal displacement may give rise to a dry pleurisy on the sound side. While normally the two pleural surfaces are in apposition, the interposition of a small amount of serous fluid renders the movement of the opposed surfaces painless. By pressure this serous fluid may be lessened in a given area until the normal pleural movements are no longer possible, thus giving rise to the pain and the fine friction sounds. The etiology of this pleurisy does not seem to be tuberculous and, therefore, its presence is not an indication to discontinue treatment even temporarily but, rather, to lower the pressure in the pneumothorax cavity. Some cases of loss of weight will be explained by excessive displacement and a gain will promptly follow a reduction of the pressures. The cycle of events would be displacement, hypo-oxygenation, loss of weight.

Intermittent Hydronephrosis.—The cause of the obstruction in Hailes' case was an aberrant vein and not an artery, as is usually the case. The normal positions of the vessel and the ureter were retained. The tumor bulged into the epigastrium and the left hypochondrium. A successful result was obtained by conservative operation. There was an absence in the history either of the instant passage of a large quantity of urine or of any frequency of micturition while the sac was emptying. Judging from the macroscopic appearances the kidney must have functioned satisfactorily in the intervals between attacks.

Annales de l'Institut Pasteur, Paris

37: 921-1000 (Nov.) 1923

Cholesterolemia. A. C. Marie.—p. 921.
*Purification of Antiserums. A. Besredka.—p. 935.
*Idem. T. Schönfelder.—p. 941.
*Idem. S. Vaglianos.—p. 943.
Action of Yeast on Alexin. Meguro.—p. 946.
*Fermentation by Lactic Acid Bacilli. Lumière.—p. 967. Idem. Cardot. —p. 988. Reply. Lumière.—p. 997.
Vaccination by Mouth Against Cattle Plague. A. Calmette.—p. 1000.

Prevention of Anaphylaxis by Purifying the Antiserum.—Besredka remarks that the means devised to ward off anaphylactic shock all require the biologic cooperation of the organism. The same result—prevention of the anaphylactic shock—can be realized by purifying the antiserum, thus abolishing the factors responsible for the shock. He accomplishes this by dissolving 5 gm. of the desiccated serum in only enough fluid to make it a thick syrup. This is poured into a Petri dish and heated at 58 or 60 C. for an hour, at most, until it has coagulated to a rubbery mass. This coagulated serum has lost most of its toxic features while retaining all its specific properties. The guinea-pig can stand five or ten times the otherwise lethal intratracheal dose of this coagulated serum. He ascribes the difference to the slowness of the reaction between the antigen and the antibody. Only a small amount of the coagulated antiserum dissolves at first and this small amount answers the purpose of a preliminary injection, averting the anaphylactic shock. This effect can be rendered more certain by leaving out some of the proteins in the antiserum. The antiserum, desiccated and coagulated at 58 C. as just described, is pulverized and emulsified; the emulsion separates into two layers. The lower two thirds is a white mass that he calls the residual antiserum; the upper third is a yellowish fluid—the "purified antiserum"—which has lost most of its toxic properties. The specific properties seem to be almost entirely in the fluid and not in the residual portion.

Residual and Purified Antiserums.—Schönfelder's research was restricted to dysentery antiserum in its effect on mice. The purified antiserum is not quite so active in prevention as the untreated antiserum. The effectual preventive dose was 0.012 c.c. while the effectual dose of untreated or desiccated antiserum was 0.00625 c.c.

Vaglianos found the purified cholera antiserum equally potent with untreated antiserum in research on rabbits.

Lactic Fermentation.—Lumière asserts that the variations in lactic fermentation to which Richet and others have called attention are due to defective technic. He has worked out a technic which avoids these sources of error. Even such a trifle as agitating the culture, instead of setting it aside, is enough to alter the outcome and suggest mysterious forces at work.

Annales des Maladies Vénériennes, Paris

18: 897-976 (Dec.) 1923

*Arsphenamin in Morocco. Decrop and Salle.—p. 897.
*Influence of Soft Chancre on Syphilis. H. Haxthausen.—p. 924.
The Wassermann Reaction. R. Barthélemy.—p. 941.
Late Evolution of Syphilis. H. Malherbe.—p. 944.

Accidents and Results of Intravenous Injections of Arsphenamin in Morocco.—Syphilis is found among 75 to 80 per cent. of the population of Morocco. Decrop and Salle relate that the results of arsphenamin injections are beginning to be well known among the Moroccans, and that at Fez, from 1919 to 1923, 124,368 patients applied for treatment, and 77,968 injections were made. They noted only 3 sudden deaths, 4 abortions and 6 cases of jaundice. As regards shocks or intolerance, there were 84 cases of a nitritoid crisis, 114 of remote general symptoms, and 60 of miscellaneous eruptions. They say that from year to year the terrible appearances of "Arab syphilis" are fast disappearing, and that they are mainly found now in tribes far from Fez. Instead of the multiple bone or skin lesions previously found it is now only a beginning periostitis of the tibia or some other single symptom. Very often the husband, in the absence of all syphilitic manifestations, asks to have his blood or that of his wife examined for fear that his offspring may be infected. Instead of being a common infection in children, it is gradually becoming a venereal disease. The Arabs are now eagerly asking for the "shooka," as they call the injections, as a remedy for all imaginable affections.

Influence of Soft Chancre on Syphilis.—Haxthausen believes that soft chancre can cause an abnormal evolution of syphilis in such a way that secondary symptoms and especially sero-reactions are eliminated or weakened.

Annales de Médecine, Paris

14: 349-444 (Nov.) 1923

*Intestinal Lesions in Typhoid. V. de Lavergne.—p. 349.
Roentgenology of Lung Cavities. Piguet and Giraud.—p. 363.
Tuberculous Myocarditis with Block. Meyer and Oberling.—p. 368.
*Cholesterolemia in Obliterating Arteritis. J. Heitz.—p. 378.
Slow Malignant Endocarditis. E. Lazeanu et al.—p. 410.
Epinephrin Reaction in Goiter. M. Labbé and Lambru.—p. 423.
*Evolution of Pulmonary Tuberculosis. J. Paraf.—p. 431.

Intestinal Lesions in Typhoid.—De Lavergne believes that the intestinal ulcerations in typhoid fever are due to reinfection from the bile. The first infection sensitizes the tissues, but the lesions appear only after the end of the three weeks period of ante-allergy.

Cholesterolemia in Obliterating Arteritis.—Heitz found hypercholesterolemia in his twenty-seven patients with end-arteritis obliterans. Only two among them had less than 0.2 per cent. of cholesterol in the serum. Diabetes, syphilis and excessive use of tobacco seem to be the principal etiologic agents.

Evolution of Pulmonary Tuberculosis.—Paraf investigated the possibilities of infection in thirty-two children, aged 8-13, suffering from pulmonary tuberculosis. A slight exposure dating five to ten years back was found in all. Recent exposures were improbable in the majority of the children. Thus it seems that the reinfection was endogenous. There was practically always within the last six months some external factor, especially an infectious disease, reducing the resistance against tuberculosis. Prevention of these diseases is at the same time prevention of endogenous tuberculous reinfection.

Archives des Maladies de l'App. Digestif, Paris

13: 833-936 (Nov.) 1923

*Jaundice with Duodenal Ulcers. G. Bickel.—p. 833.
Mega-Esophagus. D. Simici and G. Giurea.—p. 854.
The Organic Acids in Urine. R. Goiffon.—p. 869.
Intestinal Amebiasis in Egypt. Ralli.—p. 882.

Jaundice with Duodenal Ulcers.—Bickel draws attention to cases of jaundice caused by an ulcer or cicatricial tissue in the duodenum.

Archives des Maladies du Cœur, etc., Paris

16: 769-840 (Nov.) 1923

Premature Ventricular Escapement. R. Lutembacher.—p. 769.
*The Blood in Smallpox and Alastrim. Sabrazès and Massias.—p. 777.
Syphilitic Aneurysm of the Aorta. E. Lenoble.—p. 794.

The Blood in Smallpox and Alastrim.—Sabrazès and Massias tabulate the serial blood findings in a case of smallpox. They confirm the monocytosis and myelocytic reaction. The patient was painted four times daily with a 0.8 per cent. aqueous solution of potassium permanganate. Eucalyptus oil was used externally every other day, and the air passages were disinfected. He recovered practically without a stage of suppuration.

Archives de Médecine des Enfants, Paris

26: 649-712 (Nov.) 1923

*Pineal Gland Syndromes. P. Lereboullet.—p. 649.
Pneumococcus False Diphtheria. M. Riser and Bert.—p. 671.
Vaccine Treatment of Asthma. M. de Biehler.—p. 682.
*Micro-Organism Causing Measles. J. Comby.—p. 686.

Pineal Gland Syndromes.—Lereboullet deals with the syndrome of the pineal gland (early sexual and somatic development). It is difficult to decide which symptoms are due to the gland and which to compression or irritation of brain centers. Irradiation is, so far, the best treatment.

Etiology of Measles.—This is a summary of Caronia's work, reviewed here, Sept. 29, 1923, p. 1152.

26: 713-796 (Dec.) 1923

*Hypocalcemia and Spasmophilia. P. Woringer.—p. 713.
Septicopyemia with Pneumococci and Bubonic Plague. L. Guinon et al. —p. 741.

Latent Cardiac Malformation. F. Bienvenue.—p. 747.
Acute Cerebrospinal Meningitis. C. Voudouris.—p. 750.
Acute Orchitis in Children. J. Comby.—p. 754.

Low Blood Calcium in Spasmophilia.—Woringer states that spasmophilia in nurslings is always accompanied by lowering of the calcium ratio in the blood. It is not in direct relation with the gravity of the disease. Other causes (fever, emotions, etc.) may entail the convulsive syndrome. Calcium salts in sufficient doses raise the lowered ratio of calcium in the blood, and it may become normal, with a disappearance of convulsions and hyperexcitability. Ammonium chlorid and ultraviolet rays have the same effect.

Bulletin de l'Académie de Médecine, Paris

90: 497-576 (Dec. 11) 1923

The Work of J. Grancher. C. Achard.—p. 533.
*Prizes Offered by the Académie.—p. 547.

International Prizes.—All but ten of the eighty or more prizes are open to foreign competition. The details and conditions are given in full. The prizes awarded in 1923 were mentioned in the News department, recently, p. 137. The members of the Académie are *hors concours*.

Gynécologie et Obstétrique, Paris

8: 415-494 (Nov.) 1923

The Puerperal Fever Congress.—p. 415.

Journal de Chirurgie, Paris

22: 391-502 (Nov.) 1923

*Reconstruction After Fracture. R. Baudet and F. Masmonteil.—p. 391.
Iodin Sterilization During Operations. P. Raul.—p. 407.

Reconstruction of Fractured Shaft of Bone in Leg.—Baudet and Masmonteil give numerous illustrations of the instruments for osteosynthesis after oblique and transverse fractures.

Journal d'Urologie, Paris

16: 257-336 (Oct.) 1923

*Phenolsulphonephthalein Test. P. Bazy.—p. 257.
*The Ambard Coefficient. R. H. Kummer.—p. 260.
Ridge Between Ureter Mouths. H. Blanc.—p. 274.
Mixed Choristoma in the Kidney. C. Chiaudano.—p. 286.
Radium Treatment of Degenerated Papilloma of the Bladder. Alamartine and Charleux.—p. 291.
Stopcock for Slow Evacuation of Distended Bladder. L. Boulanger.—p. 295.

Phenolsulphonephthalein Test. — Bazy made successful nephrectomies after favorable methylene blue tests, while the Ambard coefficient was 0,250 and even 0,300. The elimination test with phenolsulphonephthalein gives also better information as to the functional value of the kidneys than the ureosecretory coefficient.

The Ambard Coefficient.—Kummer finds that in normal subjects there exists an alternation between the amount of different substances eliminated by the urine. This physiologic alternation is lacking in grave lesions of the kidneys. He finds that Ambard's coefficient depends partly on other substances excreted at the same time.

Médecine, Paris

5: 5-80 (Oct.) 1923, and Supplement

Surgery in 1923. P. Mathieu.—p. 5.
Arthroplasty of Knee. C. Lenormant.—p. 14.
Staphylorrhaphy. V. Veau.—p. 21.
*Dilatation of Ascending Colon. R. Grégoire.—p. 26.
Continent Artificial Anus. J. Okinczyc.—p. 28.
Cholecystogastrostomy in Angiocholecystitis. G. Cotte.—p. 32.
Sacral Epidural Anesthesia. P. Mocquot.—p. 34.
Treatment of Genital Prolapse in Elderly Women. A. Cauchoix.—p. 38.
Vaccine Treatment of Surgical Tuberculosis. L. Bazy.—p. 43.
Obliteration of Biliary Ducts. P. Mathieu.—p. 46.
Facial Surgery in 1923. L. Dufourmentel.—p. 52.
Nephrotomy for Kidney Calculi. E. Papin.—p. 55.
*Acute Intussusception in Children. C. Girode.—p. 58.
Chemical Treatment of Sympathetic System. Laignel-Lavastine. Supplement, pp. 1-32.

Dilatation of Ascending Colon.—Grégoire draws attention to a condition frequently diagnosed as chronic appendicitis. The cecum and ascending colon are dilated and painful, and the patients are constipated or sometimes diarrheic. Exacerbations of the pains do not accelerate the pulse, nor are they connected with a rise in temperature. Abdominal massage, laxatives, and dieting relieve many patients. Others have to be operated on.

Acute Intussusception in Children.—Girode recommends rectal examination of children with acute colic. The palpating finger may feel the invaginated intestine or be covered with blood-streaked feces even before the typical dysenteriform stool appears. Pure blood may also be evacuated. The development of the symptoms is slower in older children. The treatment is surgical.

Nourrisson, Paris

11: 353-442 (Nov.) 1923

*Spasmophilia in Infants. P. Woringer and N. E. Zehnter.—p. 353.
*Enlargement of Epitrochlear Glands. J. Grenier.—p. 369.
Disease of Retromastoid Suboccipital Glands. G. Blechmann and S. Delaplace.—p. 383.

Spasmophilia in Infants.—Woringer and Zehnter recommend in mild cases irradiation with ultraviolet rays or sunlight. In severe cases this must be supplemented with 100 c.c. of a 5 per cent. solution of calcium chlorid daily for a week.

Enlargement of Epitrochlear Glands.—Grenier found that the epitrochlear gland can be situated as high as in the middle of the arm (inner surface). The palpation of deep glands is subject to errors due to confusion with the ulnar or radial nerve. Enlargement of the epitrochlear glands speaks for syphilis only if it is bilateral and if tuberculosis and local lesions of the upper extremities can be excluded (Marfan).

Paris Médical

465-480 (Dec. 8) 1923

Variations of Basal Metabolism. Sainton and Péron.—p. 465.
*Pulmonary Gangrene. G. Rosenthal.—p. 467.
Recent Works on Compression of Spinal Cord. Mouzon.—p. 471.
Apparatus for Homogenization of Tuberculous Sputum. J. Dumont.—p. 478.

Pulmonary Gangrene.—Rosenthal divides pulmonary gangrene into the types with and without anaerobes, and the fusospirillar type which is curable with arsphenamin and is diagnosed by examining the sputum. The perfringens group should be treated with a gangrene antiserum. The careful examination of sputum for acid fast bacilli will bring out the important group of pulmonary gangrene of tuberculous origin. Unilateral gangrene may heal under artificial pneumothorax.

481-500 (Dec. 15) 1923

*Electrolytic Introduction of Drugs. A. Strohl.—p. 481.
First Aid in Asphyxia. R. Legendre.—p. 486.
Artificial Heliotherapy. L. G. Dufestel.—p. 488.
*Diathermy in Facial Paralysis. Bordier.—p. 491.
Respiration in Physical Education. P. Chailley-Bert.—p. 493.
Frequent Painful Sequela of Sprains. Durey.—p. 495.

Electrolytic Introduction of Drugs.—Strohl gives the history, technic and indications for electrolytic administration of drugs.

Diathermy of Facial Paralysis.—Bordier recommends diathermy in facial paralysis, especially in cases with a slight reaction of degeneration.

Presse Médicale, Paris

31: 1013-1024 (Dec. 5) 1923

*Structure of Gouty Tophi. A. Chauffard and M. Wolf.—p. 1013.
Treatment of Acute Gastro-Enteritis. C. Richet, Jr., and J. Celice.—p. 1015.
Blank Forms for Roentgenoscopy. J. Génévrier and A. Robin.—p. 1018.
Gastro-Enterostomy with Short Loop. P. Aumon.—p. 1019.
*After Gynecologic Irradiation. E. Apert and Kermorgant.—p. 1020.

Structure of Gouty Tophi.—Chauffard and Wolf describe and illustrate the histology of tophi. Chauffard found with other collaborators an increase of blood cholesterol in gout, as well as its presence in tophi. It is situated in the center of the tophus, while sodium urate is at the periphery. A fibrocellular and giant cell reaction surrounds these substances. The central position of the cholesterol is similar to that in gallstones and aortic atheroma. Chauffard found constantly in hypercholesterolemia a tendency to form deposits of the substance. Their localization depends on the nature of the original disease.

The Offspring After Gynecologic Irradiation.—Apert and Kermorgant describe a case of mongoloid degeneracy with multiple nevi in a child of a mother who had conceived during roentgen treatment for uterine fibroid.

31: 1025-1036 (Dec. 8) 1923

*Tuberculin Cuti-Reaction. A. B. Marfan.—p. 1025.
Freud's Doctrine. Laignel-Lavastine.—p. 1028.
Treatment of Epidemic Encephalitis. L. Cheinisse.—p. 1029.

Cuti-Reaction in Diagnosis of Tuberculosis in Children.—Marfan points out that a negative cuti-reaction may be of great value. It occurs in the "ante-allergic" period, which may vary between six days and four months. Anergy in children may be caused by measles, pneumonia, influenza, whooping cough or serious liver affections, but these findings are not constant, except in measles. The infectious diseases do not prevent a positive cuti-reaction in tuberculous nurslings. Intensive tuberculin treatment prevents the reaction for from four to seven days, which is known to fraudulent dealers and used by them in selling tuberculous animals. In the absence of these causes, a twice negative Pirquet skin tuberculin reaction indicates that the organism is free from tubercle bacilli. In his hospital, the cuti-reaction is practiced systematically on children less than 3 years old, and it has rendered very valuable help.

Schweizerische medizinische Wochenschrift, Basel

53: 1121-1140 (Dec. 6) 1923

*Exanthem from Bathing. Naegeli.—p. 1121.
Sedimentation Speed in Tuberculosis. K. von Neergaard.—p. 1122.
"Sahli's Sphygmographic Arteriometry." E. Attinger.—p. 1128.
Reply. H. Sahli.—p. 1129.
Bronchial Asthma and Hay Fever. L. von Gordon.—p. 1132. Cont'n.

Exanthem from Bathing.—Naegeli describes a maculo-urticarial eruption which occurred in persons during or after a bath in the hottest season. It lasted for fourteen days and seemed to be of infectious origin. There is a very widespread belief in Switzerland that people should not go swimming during the "dog days" (July 22-August 22).

Archivio Italiano di Chirurgia, Bologna

8: 113-240 (Nov.) 1923

*Cancer of Lymphatic Glands. E. Gioja.—p. 113.
Surgery of Bile Ducts. D. Giorgacopulo.—p. 179.
Extirpation of Lymphatics with Lip Cancer. L. Durante.—p. 201.
Reconstruction of Cheek. G. Pototschnig.—p. 209.
Progressive Dilatation of the Esophagus. D. Mambrini.—p. 225.

Misleading Primary Cancer of Lymphatic Glands.—A lymphosarcoma in a man, aged 26, and an endothelioma in a man of 42 ran their course in the cervical glands, simulating a tuberculous process. The tuberculin skin reaction was positive in both over the focus, but was negative on the arm. The subsidence of the circumference of the neck from 45 to 38 cm. under five months of iodin treatment was accepted as confirming the tuberculous nature of the process, but the neck enlarged anew after intercurrent tonsillitis. Such cases teach the wisdom of biopsy in all lesions of the kind before wasting precious time on treatment on a mistaken basis. The first case teaches further the possible efficacy of roentgenotherapy. Under two courses of exposures the neck returned almost to normal size, but it began to enlarge again in less than three months.

8: 241-344 (Nov.) 1923

Transfusion of Blood. L. Carmona.—p. 241.
*Lesions in Left Lumbar-Ovarian Region. S. Solieri.—p. 279.
*Exophthalmic Goiter with Tuberculous Thyroid. L. Frassi.—p. 289.
Fracture of Rim of Acetabulum. F. Stoccada.—p. 334.

Pathology of the Infundibulopelvic Ligament.—Solieri noted in certain cases that this ligament lifted up the adherent sigmoid flexure by cicatricial retraction or as the pregnant uterus enlarged. In a case described, there were daily attacks of pain.

Persistent Thymus in Exophthalmic Goiter.—The previously healthy woman of 39 developed severe exophthalmic goiter, and died sixteen hours after partial thyroidectomy. The pulse had been 90-92; it dropped to 52 during paroxysms of violent dyspnea and precordial constriction. The thymus weighed 21 gm., and symptoms suggested toxic action. A tuberculous process was found in the thyroid.

Pediatria, Naples

31: 1305-1328 (Dec. 15) 1923

*Raynaud's Disease in an Infant. V. Castana.—p. 1305.
Cerebrospinal Fluid in Meningitis. G. P. Porta.—p. 1317.

Raynaud's Disease.—Castana publishes a case of asymmetrical vasomotor gangrene of the left upper and lower extremities in an infant, aged 17 months. The asymmetry of the affection distinguished it from typical Raynaud's disease. The forearm had sloughed off.

Policlinico, Rome

30: 1617-1650 (Dec. 10) 1923

*Schick Test in Children with Adenoids. S. Traina.—p. 1617.
Chyluria. P. Pantaleoni.—p. 1622.
The Crisis in Pneumonia. D. Carbone.—p. 1628.

Schick Test in Children with Adenoids.—Traina found that the Schick test became negative in many children after extirpation of the adenoids.

30: 1651-1684 (Dec. 17) 1923

Phrenicotomy. U. Carpi.—p. 1651.
Blood and Constitution. S. Racchiusa.—p. 1653.
*Amebic Liver Abscess. A. Ciotola.—p. 1655.
*Costa's Reaction in Blood. M. Bagliani.—p. 1657.

Amebic Liver Abscess.—Ciotola observed recovery after emetin treatment in patients with amebic liver abscesses. He uses very large doses, injecting 0.03 gm. subcutaneously four times daily for three or four days.

Costa's Reaction in Blood.—Bagliani gives the technic and some results of Costa's procain-formaldehyd reaction with blood. It is positive in toxic and infectious conditions.

Anales de la Facultad de Medicina, Lima

6: 1-155, 1923

Case of Bulbar Glycosuria. M. González Olaechea.—p. 2.
*Gastric Symptoms with Aortitis. C. Monge.—p. 10.
Diabetes. C. F. Krumdieck.—p. 59.
Blood Grouping. E. Ciotola.—p. 108.

Stomach Disturbances from Unsuspected Disease of the Aorta.—Monge reports nine cases in which gastric disturbances proved to be a nervous reflex affection from silent or masked aortitis. Atony and hyposecretion, or pylorospasm, hypersecretion and other symptoms suggesting gastric ulcer subsided under treatment for the syphilitic aortitis alone. He declares that he now mistrusts every case of stomach disease, no matter how classical the clinical picture, until he can exclude aortitis.

Archivos Españoles de Pediatría, Madrid

7: 577-640 (Oct.) 1923

*Torsion Spasm. W. Lopez Albo.—p. 577. Begun p. 513.
Child Mortality in Spain. G. Vidal Jordana.—p. 609.

Progressive Torsion Spasm.—Lopez Albo ascribes to an unrecognized attack of epidemic encephalitis the extreme type of progressive, isolated torsion spasm presented by a girl now 8 years old. The only pathologic findings otherwise were the high glucose content of the cerebrospinal fluid and bilateral subluxation of the crystalline lens. In another case the torsion spasm developed in the man, aged 31, after unmistakable epidemic encephalitis, but it gradually subsided to complete recovery in five or six months. In two girls, aged 2 and 9, the torsion spasm was less pronounced; it was noted soon after birth in the infant, but followed mild and brief epidemic encephalitis in the other child. He has compiled 89 cases of torsion spasm, of various origins. He classes it with progressive lenticular degeneration, pseudosclerosis and bilateral athetosis as a special group of striatopallidal affections, but the last mentioned differs from the others in the absence of sclerosis of the liver. Probably many cases of so-called juvenile paralysis agitans belong in this category.

Archivos Latino-Amer. de Pediatría, Buenos Aires

17: 737-784 (Nov.) 1923

*Nutritional Disturbances in Infants. F. Schweizer.—p. 737.
*Postencephalitic Parkinsonism. S. E. Burghi.—p. 755.
*Poliomyelitis. N. Leone Bloise.—p. 767.
Transient Post-Typhoid Psychosis. Navarro and Pozzo.—p. 773.

Classification of Nutritional Disturbances in Infants.—Schweizer insists that the etiology is clear only when the cause has been long at work. There are usually various

factors involved. "The new wine of progress cannot be poured into the old bottles."

Postencephalitic Parkinsonism.—Three years have elapsed without much improvement in the severe psychic-parkinsonian syndrome in the boy, now 15, but the spasms and myoclonia are less pronounced. The extrapyramidal hypertonia seems to be stationary.

Poliomyelitis.—In Leone Bloise's case, an infant, aged 18 months, suddenly developed painful flaccid paralysis of the left shoulder and arm the third day of a mild coryza. By exclusion he diagnosed poliomyelitis. The atrophy and reaction of degeneration are slowly improving.

Revista Española de Medicina y Cirugía, Barcelona

6: 619-680 (Nov.) 1923

*Juxtapyloric Ulcer. J. M. Bartrina.—p. 619.
*Arthritis of Dental Origin. G. Marañón and M. Tapia.—p. 630.
Skull-Piercing Intracranial Tumors. A. Trias Pujol.—p. 646.

Juxtapyloric Ulcer.—Bartrina reviews his 475 operative cases of ulcer near the pylorus. The mortality totaled 16.37 per cent. by the six different methods used.

Arthritis of Dental Origin.—Marañón and Tapia say that we must admit an endogenous, humoral factor, predisposing, sensitizing the joints, and thus allowing not only colonization by bacteria but a hypertrophic reaction to the bacterial invasian. Besides eradicating the focal infection, vaccine therapy may aid materially in the cure.

Archiv für Kinderheilkunde, Stuttgart

73: 241-320 (Dec. 18) 1923

*Bone-Marrow Soup. F. Wiltschke.—p. 241.
The Blood in Scurvy in Children. C. Gottschalk.—p. 244.
*Hexamethylenamin in Intertrigo. H. Simchen.—p. 251.
Acute Cerebral Tremor. E. Baader.—p. 259.
*Adiposogenital Dystrophia. W. Klein et al.—p. 263.
*Food and Electric Excitability of Infants. G. Ockel.—p. 273.
Gummatous Syphilis in Infant. H. Krauss.—p. 288.
Survey of Vitamins. R. Berg.—p. 293.

Soup from Calf Bone-Marrow.—Wiltschke recommends a soup from calf bone-marrow for infants who do not take kindly to a mixed diet. It is made with 5 gm. of wheat grits boiled for five minutes with 100 c.c. of water and a little salt. After this, 5 gm. of fresh red bone-marrow from calves is added (preferably in gauze), boiled for a few more minutes, and supplemented with water to 100 c.c. It contains about 45 calories. Saccharin or sugar can be used to sweeten the soup.

Hexamethylenamin in Intertrigo.—Simchen gave hexamethylenamin to thirty infants suffering from intertrigo (gluteal erythem and eczemas). They recovered in three or four days without local treatment. Mixtures of urine and feces from infants thus treated did not have an ammoniacal odor, and kept their acid reaction in the incubator. This confirms Cooke's view that the condition is due to an ammoniacal fermentation of the urine. The doses used were 0.1-0.2 gm. three times a day in younger infants and light cases, and up to 0.25 gm. four times a day for older infants or with severer changes.

Adiposogenital Dystrophia.—Klein, Müller, Scheunert and Steuber determined the basal metabolism in a boy, aged 16, with adiposogenital dystrophia. They found normal figures which were lowered by injections of extracts of pituitary. This unexpected action was present without regard to the part of the pituitary from which the extracts were made.

Food and Electric Excitability of Infants.—Ockel found no distinct relations between the acid and alkali content of the food and the electric excitability in infants.

Archiv für klinische Chirurgie, Berlin

125: 633-791, 1923

*Arteriomesenteric Occlusion of the Duodenum. E. Melchior.—p. 633.
*Rectal Cancer. F. Kroll.—p. 681.
*Deposits of Calcium in or Near Joints. H. Stegemann.—p. 718.
*Suspension Stability in Diagnosis. E. Haller.—p. 739.
Laceration of Patellar Ligament. H. Hübener.—p. 744.
*Condyle and Styloid Neuralgia. A. W. Fischer.—p. 749.
Correction of Deformed Hand in Congenital Syphilis. Erlacher.—p. 776.

Arteriomesenteric Occlusion of the Duodenum.—Melchior presents evidence to demonstrate that atony of the stomach or duodenum or of both is the primary factor; the occlusion is secondary. The atony may develop slowly or rapidly, and the prognosis may be grave with either stomach or duodenum involved. The relief from rinsing out the stomach should not mislead to neglect of the ileus.

Rectal Cancers.—Kroll reviews experiences with 129 cases of rectal cancer in the last ten years. In 42 per cent. nothing but making an artificial anus was attempted. Of the twenty-three treated by abdominal-sacral amputation of the rectum, eighteen left the hospital in excellent condition. Continence was not secured by any method of operating.

Deposits of Calcium Around Joints.—Stegemann declares that many obscure painful affections of joints are due to an unsuspected para-articular deposit of calcium. There is no concretion formation, merely an accumulation of fine particles. Any joint may be affected; the deposits may be revealed by the roentgen rays when they cannot be palpated. Bursitis may be the cause or the consequence of the calcification, but under conservative measures, large deposits of long standing may be harmlessly absorbed. With much pain, the joint should be transiently immobilized and hot compresses applied, followed by hot air baths, cautious massage and medicomechanical exercises. The pains rapidly subside, and roentgenoscopy shows the retrogression of the calcium shadows. One woman with a large deposit in the trochanter region was given an hour's application of diathermy daily. The calcium shadow disappeared in two weeks. If conservative measures fail, the deposit can be extirpated.

Suspension Stability of the Blood from Surgical Standpoint.—Haller confirms the diagnostic import of accelerated speed of sedimentation of the erythrocytes. It is especially instructive in cancer, suppuration, and other conditions with devitalization of tissue, and may turn the scale in favor of operative measures.

Neuralgia in the Arm.—Fischer reports twelve cases of so-called epicondylitis and seven of styloiditis. The pains were severe and persistent, rebellious to all the usual measures. But the cure was immediate and complete when the inflamed or irritated nerve was simply shifted to a more sheltered position, putting an end to rubbing against the condyle or styloid process. With arthritis deformans of the elbow, the condyle is not so extremely sensitive to pressure, and the chronic character of the neuralgia excludes simple injury from contusion. A rheumatic-infectious factor may add its influence. If no improvement is realized under several weeks of conservative measures, he advises excision of the fascia and subcutaneous tissue containing the nerves for the condyle, or else shifting the nerve.

126: 1-651, 1923

*German Surgical Congress, 1923.—pp. 1-651.

Annual Meeting of the German Surgical Society.—The three topics on the order of the day were gallstones, renal tuberculosis and calculi, and fractures. In addition to the twenty-seven leading papers, sixty-seven other communications are here reproduced (147 illustrations). Läwen presented a man, aged 63, completely cured for two years to date of severe angiospastic-pains in the right leg, of seven years' standing. Treatment had been by freezing the sciatic nerve with carbon dioxid snow. A transient tendency to paralysis and trophic ulcers are the drawbacks of this treatment, he said, in comparison to peripheral sympathectomy. Several reported remarkable cures, after peripheral sympathectomy, of trophic ulceration, retarded consolidation of fracture, and intractable leg ulcers. Brüning suggested trying it in treatment of angiospastic migraine and tormenting tinnitus.

Endler reported remarkable relief of pains and general improvement in many cases of inoperable malignant disease treated by intravenous injection of 10-15 c.c. of their own blood serum. The 20-30 c.c. of blood drawn was kept on ice for twenty-four hours. He extols this autoserotherapy as a potent adjuvant to other measures.

Oehlecker grafted a toe which serves usefully as a thumb after loss of the entire left hand and wrist in a boy, aged 10.

Kurtzahn advocated injection of scraped tissue pulp as the most effectual and simplest method for transplanting testes, thyroid or other endocrine organs.

Deutsches Archiv für klinische Medizin, Leipzig

143: 129-192 (Oct.) 1923

Transverse Tears of the Aorta. P. Hampeln.—p. 129.
Micro-Organisms in the Duodenum. F. Raue.—p. 141.
*Treatment of Typhoid Carriers. K. Sick and H. Deist.—p. 149.
*Tubular Respiration. P. Martini and H. Müller.—p. 159.

Treatment of Typhoid Bacilli Carriers.—Deist reports the history of a girl who voided typhoid bacilli in the urine from the right kidney in spite of systematic rinsing out of the kidney pelvis. The discrimination made against her because of this carrier condition caused serious modification of the girl's character. She recovered after nephrectomy which revealed recent and congenital changes in the kidney. His case confirms Englisch's opinion on the local predisposition in any point of lesser resistance.

Tubular Respiration.—Martini and Müller conclude from their experiments on models and lungs that bronchial respiration originates in large bronchi down to a diameter of 4 mm. The consistence of the surrounding lung tissue does not contribute to the formation of these sounds. A very thin layer of pulmonary tissue containing air is sufficient to prevent transmission of bronchial breathing. Therefore tubular respiration signifies an uninterrupted infiltration, 3-5 cm. deep, extending from the surface toward the hilus. Only near the spine, a depth of 1-2 cm. is sufficient.

Deutsche medizinische Wochenschrift, Berlin

49: 1433-1458 (Nov. 16) 1923

Psychology of Dementia Praecox. P. Schilder.—p. 1433.
*Experimental Tabes. A. Buschke and H. Kroó.—p. 1435.
Different Ways of Immunization. Stahl and Winkler.—p. 1436.
*Gastric Secretion in Exophthalmic Goiter. E. Herzfeld.—p. 1436.
*Balantidium Enteritis. W. Brandt.—p. 1437.
Bone Necrosis After Scalping. E. Düttmann.—p. 1438.
Tonsillitis and Sepsis in Childbed. O. Blass.—p. 1440.
Spontaneous Rupture of Hernia. A. Roseno.—p. 1440.
Meinecke's Balsam-Extract Test. H. Deicher.—p. 1441.
Staining Tubercle Bacilli. V. Nagel.—p. 1441.
Diseases of Digestive Organs. G. Lepehne.—p. 1443.
Protection of the Vaccinated. Breger.—p. 1445.
Professional Problems. S. Alexander.—p. 1447.
Quadricentennial of Ulrich v. Hutten. H. W. Wollenberg.—p. 1448.
Gynecology of the Talmud. Vorwahl.—p. 1449.

Experimental Tabes.—Buschke and Kroó continued their research with experimental recurrens. They found in some of the mice clinical indications of lesions of the spinal cord. The histologic findings confirmed by Bielschowsky resembled those of tabes.

Gastric Secretion in Exophthalmic Goiter.—Herzfeld found in the majority of patients with exophthalmic goiter a hypoacidity or anacidity of gastric juice.

Balantidium Enteritis.—Brandt confirms the good results of quinin in enteritis due to *Balantidium coli.* Ipecac (1 gm. once daily) or emetin gave still better results.

49: 1459-1482 (Nov. 30) 1923

*Radium Emanation in Therapeutics. J. Strasburger.—p. 1459.
Blood Nitrogen in Stimulation Treatment. W. Löwe.—p. 1463.
Disturbances of the Eyes During Pregnancy. K. Fink.—p. 1465.
Typhoid Agglutination in Influenza. C. Hirsch.—p. 1467.
Phlorizin Test for Pregnancy. L. Sacharoff.—p. 1468.
Apparatus for Pneumothorax. Zobel.—p. 1470.
Recent Progress in Pediatrics. E. Stettner.—p. 1471.
Public Hygiene Board in Hamburg. G. H. Sieveking.—p. 1473.
Physician's Estimation by the Magistrate. Bier.—p. 1473.

Radium Emanation in Therapeutics.—Strasburger recommends to apply radium emanation externally in petrolatum. This binds it nine times better than air, and thirty-six times better than water. The preferable vehicle for internal administration is olive oil or an oil emulsion.

Deutsche Zeitschrift für Chirurgie, Leipzig

183: 1-128 (Nov.) 1923

*General Reactions with Healing Wounds. W. Löhr.—p. 1.
*Chronic Stenosis of the Larynx. H. Klaue.—p. 55.
*Fracture of Articulatio Atlantoepistrophica. R. Wüsthoff.—p. 73.
Oxyuris Appendicitis, Etc. K. Jaroschka.—p. 99.
Central Fibroma in Tibia. A. Beck.—p. 114.

General Reactions During Healing of Noninfected Wounds and Fractures.—Löhr was amazed at the extent and intensity of the general reactions during the stage of secretion in the healing of a noninfected wound. Sedimentation of the erythrocytes is only one gage of the metabolism of the healing wound.

Chronic Stenosis of Larynx or Trachea.—Klaue reports four cases which sustain the advantages of progressive dilatation with solid metal dilators introduced through the tracheotomy opening (Thost-Brüggemann). One of the patients thus cured in four months had worn a tracheotomy tube for nineteen years.

Fracture of Articulation of the Atlas with the Axis.—Wüsthoff adds another case to the twenty-nine he has collected in which recovery followed dislocation and fracture. Recent return of a tendency to paralysis in his case, a year and a half later, has been effectually combated with a plaster cast.

Klinische Wochenschrift, Berlin

2: 2189-2220 (Nov. 26) 1923

Economic Deflation and the People's Health. A. Gottstein.—p. 2189.
Leukorrhea. R. Schröder.—p. 2191.
*Amyloid. M. H. Kuczynski.—p. 2193.
*The Aqueous Humor in Central Nervous Affections. R. Thiel.—p. 2195.
*Diseases of Finger Joints. G. Axhausen.—p. 2197.
*Sedimentation Speed of Leukocytes. Schilling and Schulz.—p. 2198.
Oversensitiveness and Skin Inflammation. Lehner and Rajka.—p. 2201.
Aneurysm of Abdominal Aorta. E. Eskuchen.—p. 2202.
*Phosphate in Urine in Rickets. Hensch and Kramár.—p. 2205.
Leukocyte Index. M. Krebs.—p. 2206.
"Determination of Diastase." Wohlgemuth.—p. 2208. Reply. Adam.—p. 2208.
Blood Oxygen in High Altitudes. Adlersberg and Porges.—p. 2209.
Pʜ of Blood. I. Holló and S. Weiss.—p. 2210.
Cholelithiasis and Pregnancy. H. H. Schmid.—p. 2210.
Uric Acid in the Blood. E. Joël.—p. 2212. Cont'd.

Amyloid.—Kuczynski produces experimentally amyloid in mice by subcutaneous injections of casein or overfeeding. He found that these changes are reversible.

The Aqueous Humor in Central Nervous Affections.—Thiel found that fluorescein-sodium, when taken by the mouth, does not appear in the aqueous humor of the eye of healthy subjects. It is easily demonstrable in glaucoma, iritis, affections of the ciliary body and with lowered tension of the eye. It appeared also in tabes, paralysis, epidemic encephalitis and retrobulbar neuritis. Kafka drew interesting parallels between the ciliary body and the choroid plexus. Even the embryologic development is identical.

Diseases of Finger Joints.—Axhausen saw many cases of swelling of an interphalangeal joint, especially of the middle and end joint of the index, in girls. The affection is preceded by a reddening of the skin. It was probable that it was caused by the bacillus of erysipelas of hogs. The specific antiserum had a favorable influence.

Sedimentation Speed of Leukocytes.—Schilling and Schulz examined the sedimentation speed of the leukocytes. It is different from the sedimentation of erythrocytes. Its relation to infectious processes is clearer. Globulin and fibrinogen cannot be the sole cause of the increased speed.

Phosphate and Diastase in the Urine in Rickets.—Hensch and Kramár found much more phosphates and diastase in the urine of children with severe rickets than in the controls.

2: 2269-2300 (Dec. 10) 1923

Brain Changes in Dementia Praecox. B. Klarfeld.—p. 2269.
Vagus and Sympathetic. F. Brüning.—p. 2272.
Mental Influence on Gastric Motility. Heyer.—p. 2274.
*Inactivation of Vitamins in Infants. Ederer and Kramár.—p. 2277.
Action of Carbon Dioxid on Lungs. H. Löhr.—p. 2278.
Fluctuations in Capillary Pressure. I. Göbel.—p. 2279.
Chronic Septicemia and Tuberculosis. Loewenhardt.—p. 2280.
Bismuth Treatment in Syphilis. Eliassow and Sternberg.—p. 2282.
"After-Movements" in Man. R. Matthaei.—p. 2285.
*Chemical Regulation of the Heart. L. Asher.—p. 2285.
Hereditary Ptosis. H. Killian.—p. 2286.
Winter Peak of Infant Mortality. R. Guggenheim.—p. 2290.

Inactivation of Vitamins in Infants.—Ederer and Kramár believe that the strong reduction which occurs in the intestines of infants suffering from the malnutrition due to milk inactivates the vitamins. The condition—Milchnährschaden—might be thus an endogenous avitaminosis.

Chemical Regulation of the Heart.—Asher found that the frog heart perfused from the liver beats more strongly.

The changes observed correspond to a stimulation of the sympathetic.

Medizinische Klinik, Berlin

19: 1567-1594 (Dec. 2) 1923

Gastric and Duodenal Ulcer. K. Walko.—p. 1567.
Insufflation of Tubes. H. Sellheim.—p. 1570. Conc'n.
Venous Pressure in Hypertension. Rotky and Klein.—p. 1574. Begun p. 1542.
Rough Breathing. A. Brecke.—p. 1577.
*Healing of Ulcers with Filling Defects. E. Bernheim.—p. 1577.
Congenital Lack of Ulna. H. Wernscheid.—p. 1578.
*Bacteriophagy. O. Bail and T. Matsumoto.—p. 1579.
Physical Treatment. A. Laqueur.—p. 1583.
Present Status of Social Insurance. Wreschner.—p. 1593.

Healing of Ulcers with Filling Defects.—Bernheim reports two cases of healing of ulcers with deep filling defects.

Bacteriophagy.—Bail and Matsumoto found that not only bacteriophages but also bacteria are unable to proliferate in a fluid medium above a certain concentration. The maximal figures for each are identical: In a given amount of culture medium exactly as many bacteriophages can form as there are bacilli.

19: 1595-1624 (Dec. 9) 1923

*One Hundred Gasserectomies. F. Krause.—p. 1595.
Pyelitis. W. Jülich.—p. 1600.
Scarlet Fever Without Eruption. C. Leiner.—p. 1603.
Preventive Tuberculin Treatment. M. Weiss.—p. 1604.
Case of Pellagroid. M. Fischer.—p. 1606.
*Bergh's Bilirubin Reaction. R. Blum.—p. 1608.
Compression of Esophagus by Vertebra? H. Engel.—p. 1611.
Physical Therapy. Present Status. A. Laqueur.—p. 1613. Conc'n.
The Physician in the Fight Against Tuberculosis. Brecke.—p. 1621.

Removal of Gasserian Ganglion.—Krause reports on his 100 gasserectomies for trigeminal neuralgia. The mortality was 11 per cent. The motor and trophic disturbances were less than anticipated. He always tries alcohol injections into the peripheral nerves, preceded by procain, before he decides to operate. Repeated injections of alcohol into the ganglion make the operation difficult.

Bergh's Bilirubin Reaction.—Blum publishes two histories of operated cases. Hijman van den Bergh's bilirubin reaction in the serum was direct although the operation showed no cause for assuming a mechanical origin for the jaundice.

19: 1625-1656 (Dec. 16) 1923

*Change of Reactivity. R. Stahl.—p. 1625.
*Laceration of Abdominal Muscle Fibers. H. Wildegans.—p. 1628.
Acute Phthisis in Infant. B. Epstein and H. Kment.—p. 1630.
*Xanthoma of the Eyelid. G. Nobl.—p. 1631.
Foreign Bodies in Trachea and Esophagus. J. Bumba.—p. 1633.
Treatment of Chronic Diseases of Circulation. Fahrenkamp.—p. 1635.
Gangrenous Herpes Zoster. K. Küster.—p. 1638.
*Immunity After Typhus Fever. F. Breinl.—p. 1639.
Fright as Alleged Cause of Death. H. Engel.—p. 1640.
Orthopedics from Financial and Technical Standpoints. S. Peltesohn.—p. 1642.
Death and Disease from Earthquakes. S. Gräff.—p. 1653.

Change of Reactivity.—Stahl found changes in the skin reaction to epinephrin after baths and after injections of foreign proteins. Hot baths and proteins increase the tonus of the vagus, cold baths cause sympathicotonia.

Laceration of Abdominal Muscle Fibers. — Wildegans describes two cases of subcutaneous lacerations of abdominal muscles. The symptoms may simulate a severer condition, such as irreducible hernia.

Xanthoma of the Eyelid.—Nobl treats xanthoma of the eyelid with concentrated trichloracetic acid.

Duration of Immunity After Typhus.—Breinl inoculated two guinea-pigs, twenty months after the first infection with typhus, with passage virus of typhus fever. The animals had no increased temperature, but the brain of one of them contained the virus.

Monatsschrift für Geb. und Gynäkologie, Berlin

64: 125-252 (Oct.) 1923

Biologic Explanation of Pregnancy Striae. F. Kermauner.—p. 125.
*Biologic Unity Between Mother and Child. A. Mayer.—p. 131.
Congenital Jaundice. A. Mayer.—p. 135.
Treatment of Pyelitis with Trypaflavin. W. Haupt.—p. 139.
Metreurysis with Placenta Praevia. R. Falk.—p. 145.
Active Principle of Ergot. K. Weinsheimer.—p. 149.
Febrile Abortion. F. Stein.—p. 155.
*Umbilical Adenoma. H. Keitler.—p. 171.
Metastasis in Cervix of Ovarian Cancer. H. Küstner.—p. 193.
*Vaccine Therapy of Gonorrhea. L. Kraul.—p. 203.
*Irradiation of the Ovaries. F. Unterberger.—p. 211.
Progress in Radiology. H. Langer.—p. 217.

Biologic Oneness of Mother and Child.—Mayer's tests have confirmed that at birth the mother and child form a biologic unit, and persist thus during the puerperium, unmodified by artificial feeding or icterus neonatorum, so far as the blood is concerned.

Vicarious Menstruation.—Keitler reports a case of umbilical adenoma which bled at the time of the menses. He thinks that these tumors may have been mistaken for ordinary hernia in some cases. The phenomenon of vicarious menstruation and its occasional persistence after cessation of ovarian menstruation, have convinced him that some nervous center must be postulated to which the ovary is subordinate.

Vaccine Therapy in Gonorrhea in Women.—Kraul's study of thirty-two cases has demonstrated that vaccine therapy can be depended on in some cases, but not in all. Its field is the torpid, subchronic cases, and it is directly contraindicated during the acute period or with high fever; it is useless in the stage of healing with chronic adhesions, and is dangerous in a stormy reaction, a toxic eruption, or when an overlong interval invites anaphylaxis. Vaccine therapy should not be used in a bad general condition, with lung or heart disease, etc.

Irradiation of the Ovary and the Offspring.—Unterberger pleads for the greatest caution in roentgen-ray treatment of the ovaries in women of the reproductive age.

Münchener medizinische Wochenschrift, Munich

70: 1401-1426 (Nov. 23) 1923

*Experimental Neurosyphilis. F. Plaut et al.—p. 1401.
*The Blood During Treatment of Menorrhagia. H. Kiehne.—p. 1404.
Extirpation of Uterus or Roentgen Castration? H. Sellheim.—p. 1406.
Report of Goiter Research Committee. C. Seitz.—p. 1406.
*By-Effects of Insulin. F. Fischler.—p. 1407.
*Antidote to Mercuric Chlorid. M. A. Rakusin and A. N. Nesmejanow.—p. 1409.
Typical Pleurisy Without Effusion. G. Fischer.—p. 1410.
Obstetric Malpractice Suit. A. Döderlein.—p. 1411.
"Failures of Roentgen Treatment." A. March.—p. 1411.
Starvation and Disease. H. Curschmann.—p. 1412. Begun p. 1379.

Experimental Neurosyphilis.—Plaut, Mulzer and Neubürger discuss the possibility that the changes in rabbits inoculated with brain tissue from patients with general paralysis may be due to an invisible virus. They were able to produce transmissible changes in the cerebrospinal fluid and brain of rabbits after subscrotal inoculation with brain tissue from a case of exophthalmic goiter.

The Blood During Treatment of Menorrhagia.—Kiehne found that the blood regenerates much slower in women castrated by roentgen rays than in those whose uterus has been removed because of hemorrhages.

By-Effects of Insulin.—Fischler identifies the hypoglycemic reaction in insulin intoxication with the "glycoprival intoxication" described by him in 1913-1914. The liver cannot work up normally the nitrogenous compounds without the presence of sufficient amounts of glucose.

Antidote to Mercuric Chlorid.—Rakusin and Nesmejanow's experiments demonstrate the superiority of vegetable charcoal over other absorbing materials, including animal charcoal, in the treatment of mercuric chlorid poisoning.

70: 1427-1448 (Nov. 30) 1923

*Goiter in Bavaria. M. Pfaundler and A. Wiskott.—p. 1427.
Prevention of Goiter. J. Trumpp.—p. 1430.
Fatty Degeneration of Glia Cells. M. Staemmler.—p. 1430.
The Thoracic Organs in Various Positions. H. Spatz.—p. 1431.
Treatment of Syphilis. K. Bardach.—p. 1433.
Treatment of Cancer. A. Theilhaber.—p. 1433.
The Bicentennial of Obstetric Forceps. H. Schröder.—p. 1434.
Accidents in Cerebral Arteriosclerosis. H. Curschmann.—p. 1434.
Social Insurance. Von Wilucki.—p. 1436.
Stimulation and Protein Therapy. J. Arneth.—p. 1437. Cont'n.

Goiter in Bavaria.—Pfaundler and Wiskott review the results of a collective inquiry among Bavarian physicians as to the prevalence of goiter. They emphasize the necessity to distinguish between the different causes of the enlargement of the thyroid.

70: 1471-1498 (Dec. 14) 1923

*Hard Times and Abortions. E. Bumm.—p. 1471.
Secretion of the Thymus. Birk.—p. 1472.
*Shape of Skull and Heredity. E. Fischer.—p. 1475.
Prognosis and Treatment of Cancer. F. König.—p. 1476.
*Dialysis of Blood in Living Subjects. G. Ganter.—p. 1478.
Amputations on Upper Extremities. M. zur Werth.—p. 1480.
*Arsphenamin Dermatitis. E. Hoffmann and H. T. Schreus.—p. 1481.
Treatment of Lupus Erythematodes. Hauck.—p. 1482.
Irradiation in Treatment of Diabetes. A. Andersen.—p. 1484.
*Tetanus of the New-Born. A. Bratusch-Marrain.—p. 1485.
Staining of Spirochetes. H. Kliewe.—p. 1486.
Tracheotomy. A. Krecke.—p. 1486.
The Dead Languages and Medicine. O. Körner.—p. 1487.

Hard Times and Abortions.—Bumm reports that from fifteen to twenty or even thirty women with beginning abortion apply daily at his clinic for treatment. In 90 per cent. the abortion is of criminal origin; 85 per cent. of the women are married. As long as the general distress lasts, he finds it useless for the physician to do anything except to protect these women against the sequelae. Investigations and indictments would only prevent them from looking for help in time. He is nevertheless opposed to the legal sanction of abortion. If such a law should be passed, abortion would not be a criminal offense, but it would continue to be a crime against the health of the women, against Nature, and against the future of the nation.

Shape of Skull and Heredity.—Fischer reports a change in the shape of the skulls of rats produced by avitaminosis. He believes that not only heredity but also exogenous factors ("peristasis") determine the shape of the skull. The frequency of brachycephaly in Alpine regions may have some relation to endocrine causes.

Dialysis of Blood in Living Subjects.—Ganter recommends intraperitoneal infusion of a few liters of physiologic or hypertonic salt solution in uremia. The end-products of metabolism dialyze into the fluid and can be removed with it. He had a favorable—although only transient—result in a case of diabetic coma.

Treatment of Arsphenamin Dermatitis.—Hoffmann and Schreus confirm the excellent results obtained by McBride and Dennie (summarized in THE JOURNAL, Feb. 17, 1923, p. 505) with injections of sodium thiosulphate in arsphenamin and mercurial dermatitis.

Treatment of Tetanus of the New-Born.—In tetanus of the new-born Bratusch-Marrain injected antiserum intraspinally and subcutaneously. To supplement this he gave at first twice, later once a day, 5 c.c. of a 4 per cent. solution of magnesium sulphate. Enemas with 0.5-1 gm. of chloral hydrate were sometimes necessary. Four recovered of the eight thus treated.

Wiener klinische Wochenschrift, Vienna

36: 809-826 (Nov. 15) 1923

Insulin Treatment. W. Falta.—p. 809.
Transposition of Aorta and Pulmonalis. H. Homma.—p. 810.
Vaccine Therapy of Leprosy. R. Kraus.—p. 812.
*Nonspecific Reactions in Tuberculosis. L. Petschacher.—p. 812.
Action of Ovarian Preparations. M. Floris.—p. 814.
"Action of Insulin." H. Eppinger.—p. 818.

Nonspecific Reactions in Tuberculosis.—Petschacher observed after injections of mere phenol-salt solution ameliorations, occasional focal reactions and fever, as after injections of tuberculin. An increase in temperature after tuberculin is not necessarily a sign of tuberculosis, especially not in neurotic persons. The therapeutic results of tuberculin treatment require very critical consideration. It is difficult to tell what is due to specific action, to a general action of foreign proteins, and what is accidental.

38: 827-844 (Nov. 22) 1923

*The Diazo-Reaction in Blood. A. Leimdörfer.—p. 827.
Syphilis of Lungs and Trachea. H. Schnitzler.—p. 829.
*Treatment of Electric Shock. S. Jellinek.—p. 832.
Progressive Hereditary Chorea. I. Rychlo.—p. 834.
Epilepsy and Menstruation. J. Pichler.—p. 835.
Family Insurance. S. Weiss.—p. 837.

The Diazo-Reaction in Blood.—Leimdörfer succeeded in isolating a crystalline compound of an alkaline substance from human blood. The substance is present in the red corpuscles, is soluble in water and alcohol, insoluble in ether, and gives the diazo reaction. It is not identical with histidin.

Treatment of Electric Shock.—Jellinek believes that most of the persons who appear to be killed instantly by the electric current are only asphyxiated. Artificial respiration started early and prolonged for several hours saves many of these persons. Lumbar puncture may sometimes be of value. He reports two cases of resuscitation after three hours of artificial respiration.

Zeitschrift für Krebsforschung, Berlin

20: 322-438, 1923

*Biology of Cancer Cells. R. Erdmann.—p. 322.
Serotherapy of Transplanted Tumors. S. Okonogi.—p. 349.
Tumors in Poikilothermic Animals. E. Schwarz.—p. 353.
*Formation of Cancer. E. Bauer.—p. 358.
Electrochemistry of Cancer. N. Waterman.—p. 375.
*Metastasis of Chicken Sarcoma. K. Tadenuma.—p. 394.
Tar Cancer. A. Sternberg.—p. 420.
Protecting Serum Colloids. L. Farmer Loeb.—p. 432.

Biology of Cancer Cells.—Erdmann made cultures from mice and rat tumors and reimplanted the cells. Only the tumors which were cultivated in plasma derived from animals with tumors grew again in the body of the new animals.

Formation of Cancer.—Bauer considers a lowering of the surface tension of the tissue fluid as the immediate cause of cancer. His experiments demonstrate the fact that this isolates the cells, and increases their tendency to divide. All the methods of experimental cancer production have the same effect of removing cells from the influence of the surroundings and stimulating their multiplication. The average surface tension of the serum from patients with cancer is lower than in normal subjects, and much lower than in erysipelas. Substances which lower the surface tension accelerate the growth of tumors and those which increase the tension, like calcium, inhibit the growth. The primary point of action is the tissue fluid, not the cells.

Metastasis of Chicken Sarcoma.—Tadenuma bled repeatedly fowls inoculated with a sarcoma, and found in these a strong tendency to metastasis. Extirpation of the original tumor is another method to produce metastases, because it gives them time to develop.

Zeitschrift für Tuberkulose, Leipzig

39: 1-80 (Oct.) 1923

Significance of Cavities for Tuberculosis. K. Lydtin.—p. 1.
Roentgen Examination of the Apex. J. Ziegler.—p. 7.
Tuberculosis in Infants. N. M. Frischmann.—p. 21.
*Exogenous Reinfection. Ballin.—p. 26.
Pneumothorax and Phrenicotomy. H. Maendl.—p. 30.
Hemorrhagic Exanthem After Tuberculin. E. A. Schmidt.—p. 32.

Exogenous Reinfection.—Ballin finds that there is no exact proof, so far, that the tuberculous apical process in the third stage of tuberculosis is hematogenous. There is however no proof, either, that it is due to an exogenous reinfection.

39: 81-160 (Nov.) 1923

Action of Tuberculosis Toxins on the Thyroid. R. Löwy.—p. 81.
*Asthma and Tuberculin. K. Stuhl.—p. 96.
*Complement Fixation in Tuberculosis. S. A. Petroff.—p. 100.
Balneotherapy in Tuberculosis. S. Spitzer and E. Szántó.—p. 113.
Lungs of China Workers. F. Koelsch.—p. 116.
"Phrenicotomy in Treatment of Tuberculosis." W. Felix.—p. 119.

Asthma and Tuberculin.—Stuhl considers tuberculosis as the most frequent cause of asthma. He treats it with tuberculin.

Complement Fixation in Tuberculosis.—A summary of Petroff's immunologic studies in tuberculosis was published in THE JOURNAL, Oct. 20, 1923, p. 1388.

Zentralblatt für Chirurgie, Leipzig

50: 1557-1600 (Oct. 20) 1923

*Gastric Myoma. E. Weber.—p. 1558.
Lessening the Dangers of Gastroscopy. W. Sternberg.—p. 1561.
*Resection in Duodenal Ulcer. H. Finsterer.—p. 1566.
Operative Treatment of Gastric and Duodenal Ulcer. Burk.—p. 1569.

Gastric Myoma.—Weber reports a case which suggests that, with repeated hemorrhages from the gastro-intestinal tract for which no other explanation can be found, we should suspect a myoma.

Extensive Resection of the Stomach in Duodenal Ulcer.—Finsterer recommended five years ago that in resection of a duodenal ulcer a large portion of the stomach should be removed, in order to eliminate hyperacidity and thus minimize the danger of peptic ulcer. The best proof for the correctness of the method lies in the excellent results that he has secured: In his 233 extensive resections for duodenal ulcer, not a single peptic ulcer has resulted as yet. In forty cases the observation period extends back from five to eight years, and 115 resections date back at least three years.

Zentralblatt für Gynäkologie, Leipzig

47: 1521-1552 (Sept. 29) 1923

*Middle Course in Treatment of Eclampsia. P. Zweifel.—p. 1521.
*Ileus Sub Partu. R. Hornung.—p. 1532.
Myeloperiosteitis in Pubis Following Abortion. V. Hiess.—p. 1536.
Dysmenorrhea in Relation to Constitution. M. Hirsch.—p. 1541.

Treatment of Eclampsia.—Zweifel found that the blood of eclamptic patients has an abnormally high specific gravity. "Bloodletting has no mortality." Sedatives are used with the venesection. Of sixty-three eclamptic patients treated by venesection after delivery, all recovered. Withdrawals amounting to 1,400 and 1,800 c.c. of blood were borne without the slightest harm. "Cesarean section is not necessary."

Ileus in Parturient.—Pressure of the uterus at term had induced intestinal obstruction. After delivery, the obstruction was maintained by the pressure of the evacuated uterus, and laparotomy became necessary.

Casopis lekaruv ceskych, Prague

62: 1161-1192 (Nov. 3) 1923

Adenoid Tissue of Conjunctiva. N. Solovcov.—p. 1161.
Sexual Causes of Suicide. E. Knobloch.—p. 1164.
*Confusional Paranoia. A. Heveroch.—p. 1171. Conc'n.
Insulin. Kimla.—p. 1180. Cont'n.

Confusional Paranoia.—Heveroch differentiates from schizophrenia a group of affections which he calls taractic paranoia, from the Greek *taraxis*, "confusion."

62: 1193-1224 (Nov. 10) 1923

*Blood Ferments in Psychiatry. F. Kafka and K. Hlava.—p. 1193.
*Venereal Diseases in Jails. H. Pelc.—p. 1204.
Survey on Insulin. Kimla.—p. 1214. Begun p. 1149.

Blood Ferments in Psychiatry.—Kafka and Hlava found a normal antitryptic and amylolytic titer in the serum of manics and depressives. This was in marked contrast to schizophrenias; the latter showed high antitryptic and low amylolytic figures, which resembled their findings in cancer cases. Syphilitic affections of the brain always had increased amounts of antitrypsin and usually also of amylase. They observed a very marked increase of the amylolytic titer in the status epilepticus and in epilectic obnubilation.

Venereal Diseases in Jails.—Pelc investigated the venereal diseases in a jail for men. He found that about 40 per cent. of them need appropriate medical treatment (20 per cent. for syphilis). Not one case of sufficiently treated syphilis was found among the newly received prisoners. One third to one half of them had a history of some venereal disease.

62: 1225-1256 (Nov. 17) 1923

Pyelography and Pyeloscopy. J. Rejsek.—p. 1225.
*Hemophilia with Male Heredity. B. Veselý.—p. 1228.
Elongation of the Duodenum. A. Sigmund.—p. 1229. Began p. 1198.
Uselessness of Peritoneal Drainage. K. Koch.—p. 1239.

Hemophilia with Male Heredity.—Vesely reports the history of a bleeder with prolonged coagulation time and reduced numbers of blood platelets. Normal horse serum (20 c.c.) stopped the bleeding. The father, grandfather and brother of the patient were also bleeders. A cousin (son of an aunt) is also affected. The women are free from the disease. The symptoms cease in this family after the age of 20.

62: 1257-1288 (Nov. 24) 1923

*Aortitis. Libensky.—p. 1257. Conc'n p. 1289.
*Subcutaneous Symphysiotomy. A. Ostrcil.—p. 1266. Conc'n p. 1303.
Pyelography and Pyeloscopy. J. Rejsek.—p. 1271. Conc'n.

Aortitis.—Libensky observed frequently in patients suffering from aortitis a discrepancy between marked pulsation of the carotids and a normal or weak heart beat. Sometimes the pulsation of one carotid, especially the left side, is much stronger than on the other side. He found dilatation of cutaneous veins in the aortic region in one third of his cases. Antisyphilitic treatment should be used on the slightest suspicion of syphilis, regardless of a negative Wassermann reaction.

Subcutaneous Symphysiotomy.—Ostrcil recommends subcutaneous symphysiotomy in multiparae with moderate degrees of contracted pelvis. It is absolutely to be preferred to a cervical cesarean section in infected cases. He considers it an advantage in multiparae, even under aseptic conditions, because he found a permanent increase in the conjugata vera in one third of his cases. In a primipara, perforation of the fetal head is preferable.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 2545-2660 (Dec. 15) 1923

*Treatment of Asthma. J. Hekman.—p. 2550.
Electrodiagnosis. H. de Levie.—p. 2565.
*Electrochemical Research on Cancer. N. Waterman.—p. 2579.
*Vitamin C. J. Koopman.—p. 2595.
Roentgenology of Calculus in Kidney. F. Hijmans.—p. 2599.
Influenza Bacillus Meningitis. A. Kropveld.—p. 2603.
Thrombosis of Inferior Vena Cava. J. Broekmeyer.—p. 2605.
Present Status of Lange Gold Test. N. van der Walle.—p. 2610.

Treatment of Asthma.—Hekman calls attention to the invariable presence of streptococci in large numbers—with other bacteria variable—in the sputum from 300 cases of bronchial asthma in different parts of the Netherlands. In nearly every instance the asthma had developed in direct connection with some infectious disease, generally in childhood. Hence he ascribes the asthma in these cases to some inflammatory process in the smaller air passages, and treats with a vaccine made from the sputum. He reports encouraging results even in the patient's usual environment. Intractable cases sometimes yielded to change of scene, tuberculin treatment, protein therapy or turpentine fixation abscess. Asthma from anaphylaxis is rare in comparison to this form.

Electrochemical Diagnosis of Cancer.—Waterman has found the ratio between the electric resistance and polarization figures specifically lower in cancer tissue. Pancreas was the only normal tissue that responded like cancer tissue.

Test for Vitamin C.—Koopman gives the technic for Bezssonoff's color test for vitamin C in foods, and presents corroborative evidence sustaining its reliability.

Hospitalstidende, Copenhagen

66: 761-776 (Oct. 24) 1923

*Cystic Disease of the Mamma. E. V. Jensen.—p. 761.

Cystic Disease of the Mamma.—Jensen's study of the literature and of a mammary tumor case has confirmed the analogy between Reclus' cystic disease of the mamma and hypertrophy of the prostate. Both are due to senile parenchymatous hypertrophy, of adenomatous type. The mammary affection probably is often mistaken for cancer, as one breast is usually affected more than the other.

66: 777-796 (Oct. 31) 1923

*Microgage for Fat in Blood. H. I. Bing and H. Heckscher.—p. 777.

Micromethod for Determination of Fat Content of the Blood.—Bing and Heckscher's filter paper test is based on precipitation of the dissolved fat in the form of a barium chlorid soap, and estimation of the turbidity of the suspension. They have found this method simple, easy and accurate with only 0.1 c.c. of blood or milk.

66: 797-816 (Nov. 7) 1923

*Primary Sarcoma in Small Intestine. E. Petersen.—p. 797. Begun p. 782.

Sarcomas in Small Intestine.—Two primary sarcomas were successfully removed with 35 cm. of the ileum of the man, aged 67. In the 85 cases Petersen has compiled, metastasis was common, but was least with the spindle-cell type, and these were all solitary. The patients were all males but 27, including a congenital case. In 3 cases the large sarcoma was found six to ten weeks after a severe contusion of the region during apparently complete health.